SERVICE

Sales & Service Prove Profitable Combination for New York Firm

NEW YORK CITY—"Start selling something."

If an independent service man should ask A. W. Whelan, head of Norshore Corp. here, how to make sure of a good year-'round income, the above would probably be his answer, for Mr. Whelan did just that and thinks the plan is O.K.

Norshore is one of two units under this man's direction. It is a sales organization, handling Mayflower compressors and Larkin coils. Unit No. 2 is the Empire Electric Refrigeration Service Co., now employing 12 service men. The two organizations were merged some time ago when Mr. Whelan decided that service *and* sales would be more profitable than service alone.

The combine's service operation comprises several types of work. In the commercial field, it services mostly Frigidaire and Kelvinator machines. It also handles service for several department stores on the household refrigerators they sell, taking this business on a contract basis. And it usually gets servicing of the Mayflower units sold by the other branch of the organization.

"We built up our service business," says Mr. Whelan, "by soliciting users of commercial refrigeration. We have laid off household (except the department store business), because there's too much grief in it. The business began to grow when people for whom we had done work began recommending us to others.

"Now we don't solicit service business anymore. Our service men are busy enough with old customers and those who call us without being contacted. We are giving our major attention to building up the selling end of the business."

On all types of service jobs, the company charges $2 an hour, with a minimum charge of $1.50 for jobs requiring less than an hour. All materials are extra. On overhaul work, the company makes an estimate on the whole job, does the work for that amount.

"Service men are plentiful," Mr. Whelan remarked, "but men of the type valuable to an independent company are mighty scarce. A lot of men are expert at a *few* jobs, but the good independent man has to be adept at a *lot*. Most of the independent service men in New York City today are former employes of service departments in factory branches or distributorships here."

He said that in his company's shop, which is equipped with lathes, drill presses, charging boards, dehydrating ovens, etc., his men can make practically any part for the systems they service, but don't do so unless absolutely necessary, because "it is so expensive that the customer balks at paying the price."

All Empire service men are paid on an hourly basis—there are no regular salaries. Although 12 men are now being employed, that number dwindles to about six during the winter months, Mr. Whelan said.

Buhl Sons to Distribute Toncan Iron

YOUNGSTOWN, Ohio—New Toncan iron distributor is Buhl Sons Co., Detroit, according to announcement by N. J. Clarke, vice president in charge of sales, Republic Steel Corp.

Cimatool Co. Develops Machine for Facing Compressor Seals

DAYTON—Just developed for one of the large refrigerator manufacturers by the Cimatool Co. of this city is a new automatic machine of the bench type for the rapid facing of compressor seals. The seal itself is cast from Durex metal which is soldered to a thin steel shield.

Investigation indicates that the rejects in manufacturing bronze refrigerator seals run as high as 30 per cent in some instances and for the industry at large average between 15 and 30 per cent. A seal is rejected for either inaccurate machining or for faulty bronze.

The bore and face of these seals must be machined to a tolerance of not more than 0.0005 in. in order that the seal may function effectively in preventing refrigerant leakage in service. In order to hold these tolerances, boring and facing are usually done with a diamond or tungsten carbide tool.

The spindle of Cimatool's new machine is belt driven from a 2-hp. motor and has a speed of 3,000 r.p.m. It operates on two sets of pre-loaded precision ball bearings. These bearings, on which depend the accuracy of this spindle, are provided with an automatic wear compensator which maintains the bearing adjustment at all times and effectively nullifies temperature changes in the bearing.

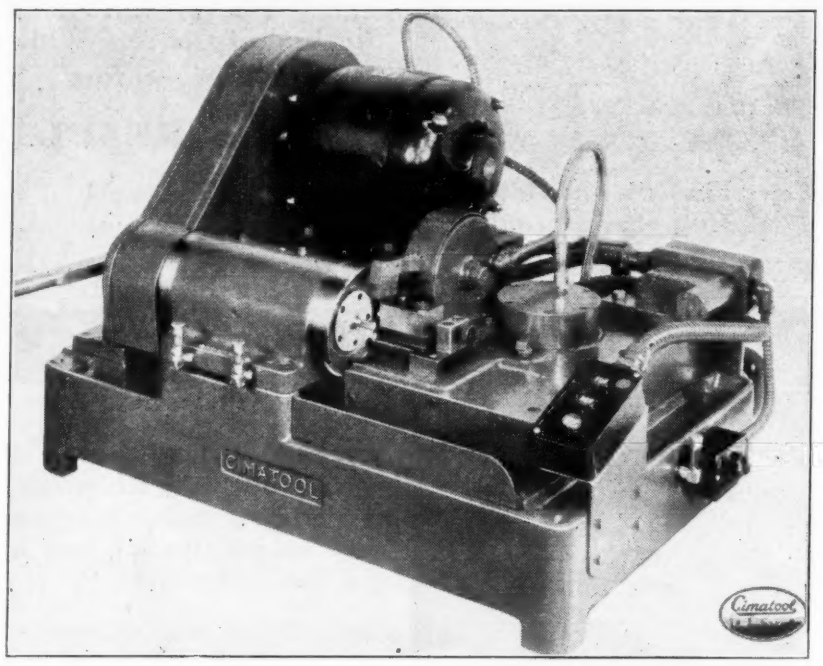
All races are ground and lapped in place. The spindle assembly is dynamically balanced. A half-turn plug, and clamping chuck, locate the work and hold it in place on the spindle.

The large picture shows how the tool and fixture are arranged. The table moves forward and back—rapid advance, slower feed, reverses and returns, first at slow feed until cutter passes work (machines both directions, although this may be varied) and then a rapid return to starting position.

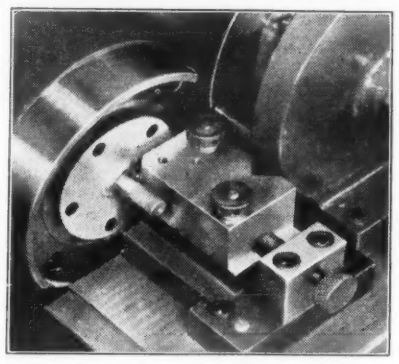
The safety device appearing just above the tool above protects the tool against damage. The machine is automatically stopped when the safety device is tripped.

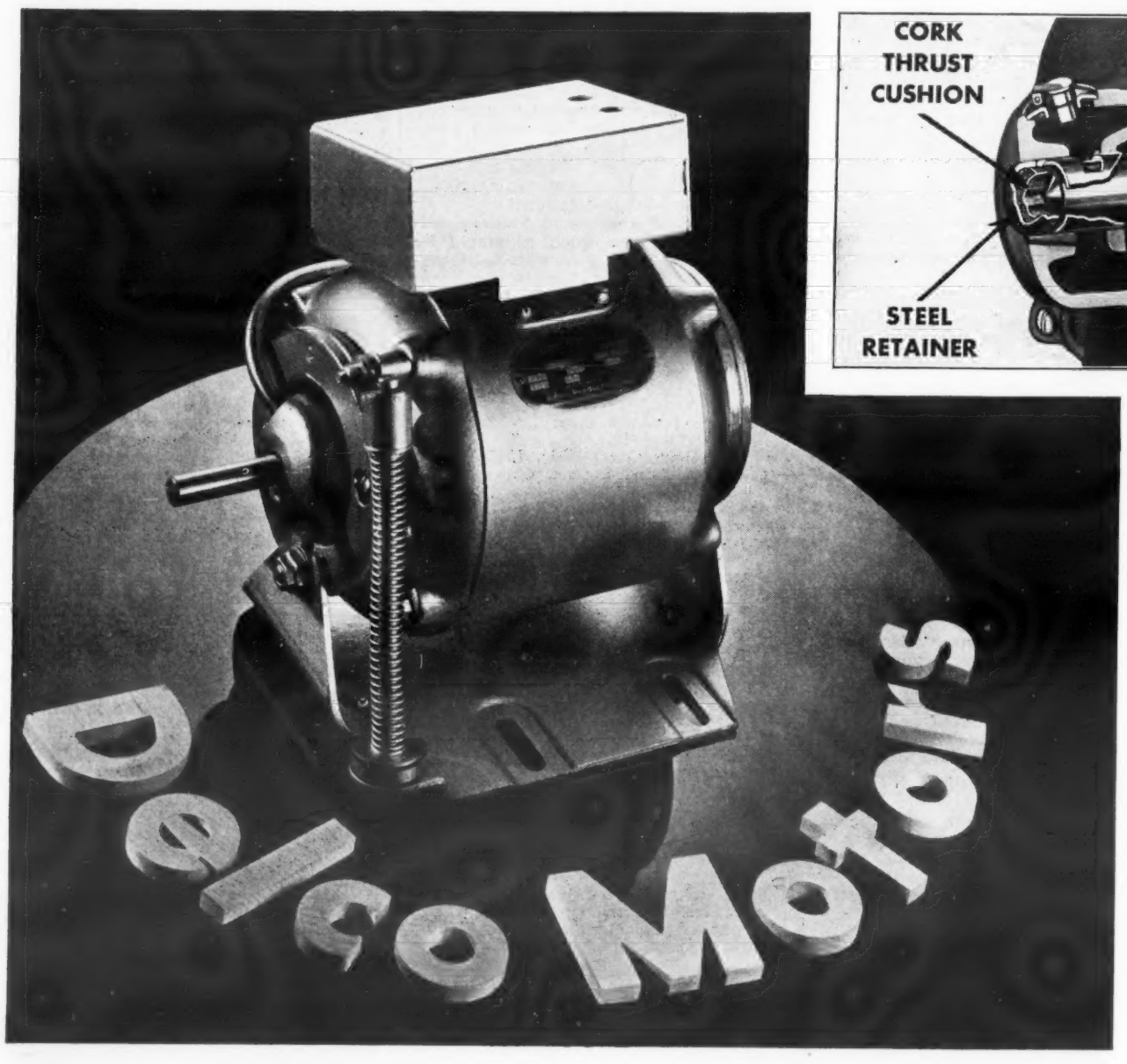
This machine is now producing 105 parts per hour. Higher production can be obtained, depending on dimensions of part, finish required, etc., according to its designers.

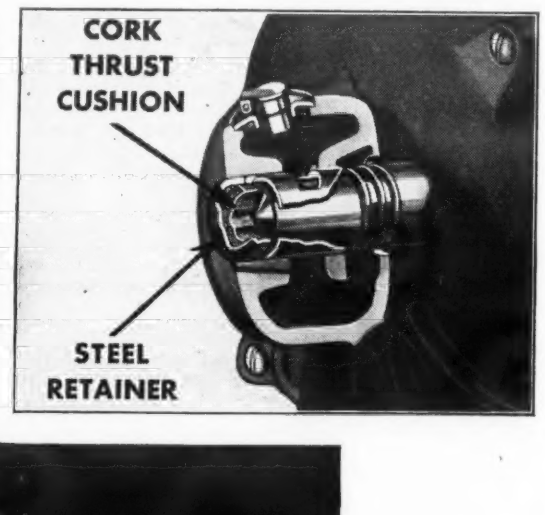
New Seal Facing Machine



The above machine was developed for a large refrigeration manufacturer to use in facing Durex metal compressor seals. The insert at the right shows details of the cutting element on the machine.







DELCO'S AUTOMATIC
END-PLAY TAKE-UP
eliminates
END-PLAY NOISE
and
helps satisfy customers

TO THE electric refrigerator owner, nothing is quite so annoying as noisy motor operation—unless it be failure of the motor itself. That is why Delco has gone much farther than merely building a dependable motor. Delco has provided the automatic end-play take-up which eliminates all end-play noise. A cork thrust cushion completely absorbs the longitudinal movements of the rotor and end-play noises cannot develop. Since wear is negligible, no adjustments are needed and oiling is unnecessary because the cork is properly lubricated during assembly. This and other patented features typify the extra value that is built into Delco motors—value that accounts for Delco's increasing favor among the electric refrigerator manufacturers.

DELCO PRODUCTS CORPORATION, DAYTON, OHIO

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS. MEMBER PERIODICAL PUBLISHERS INSTITUTE.

ISSUED EVERY WEEK
VOL. 12, NO. 18, SERIAL NO. 284

Copyright, 1934, by Business News Pub. Co.

DETROIT, MICHIGAN, AUGUST 29, 1934

Entered as second-class matter Aug. 1, 1927

THREE DOLLARS PER YEAR
TEN CENTS PER COPY

THE JOHN CRERAR LIBRARY
WRITE NOT TAKE READ ON ARRIVAL
AUG 3 1934
LIBRARY

Unit Conditioner Group Selects Officers, Board

Fair Trade Practice Code Submitted to NRA By Association

NEW YORK CITY—Officers of the newly formed Unit Air Conditioner Manufacturers Association have just been announced by John A. Dewhurst, temporary secretary, as follows: president: P. A. McKittrick (treasurer and general manager, Parks-Cramer Co.); vice president: Allston Sargent (president of Campbell Metal Window Co.); and treasurer: Harry C. Grubbs, (sales manager De La Vergne Engine Co.).

A board of directors of seven elected were: chairman: Thornton Lewis (executive vice president of Carrier Engineering Corp.); members: H. C. Grubbs, De La Vergne Engine Co.; J. J. Donovan, General Electric Co.; J. W. Speer, Westinghouse Electric & Mfg. Co.; J. F. G. Miller, B. F. Sturtevant Co.; and S. E. Lauer, York Ice Machinery Corp.

A code of fair trade practices has been filed with NRA. A public hearing has been held and this part of the association's activities is now being considered in detail by the members of the association and industry.

Preliminary figures indicate that the annual gross sales for last year of unit type of equipment was approximately $4,000,000, and that the current year will see this volume exceeded by 50 per cent or more, Mr. Dewhurst states.

The membership in the association developed during the recent months of formation represents over 80 per cent of current production, according to Mr. Dewhurst.

Fedders Improves Unit Heaters

BUFFALO—Fedders Mfg. Co., Inc., here is introducing a new Series 3 line of unit heaters, featured by a number of refinements in design and appearance, according to E. R. Walker, heating division sales manager. The units are for commercial installation, and range in capacity up to 1,200 sq. ft.

Cabinets are electrically welded into one piece with integral reinforcing members, and are finished in a dark brown morocco-like texture. To provide quiet operation, use is made of streamline tubes, special fins, and resilient motor mountings.

Header tanks have integral baffles to accomplish even steam distribution throughout the element, and full-floating mountings maintain alignment of the heating element within the cabinet, reduce expansion stresses between the two, and protect the element from piping strains.

Federal Court House To Be Air Cooled

NEW YORK CITY—New Federal Court House in Foley Square here, which will be ready for occupancy early in 1935, is being equipped with a Carrier central cooling system which will provide 500 tons of refrigeration. Rooms to be cooled include the judges' chambers, jury rooms, court rooms, witness and hearing rooms, filing and record rooms, and several unassigned chambers.

Code of Air Conditioning Contractors Approved

WASHINGTON, D. C.—A code of fair competition for the Heating, Piping and Air Conditioning Contractors Division of the Construction Industry has recently been given approval by the NRA.

The code adopts the basic labor provisions of the Construction Code but fixes a minimum wage of $1.20 per hour for journeymen steamfitters in the northern zone, $1.10 per hour in the central zone, and $1 per hour in the southern zone. A minimum of $12 per week for apprentices is established for all zones.

Many Visitors Express Their Approval of the Air-Conditioned Home of the News

LAST October when F. M. Cockrell, president of Business News Publishing Co., acquired title to the big stone residential building pictured here and started to remodel it as a permanent office home for ELECTRIC REFRIGERATION NEWS, he immediately decided that it should be completely air conditioned. Various "experts" were consulted and several plans were drawn but it appeared to Mr. Cockrell that none of the proposals gave proper consideration to the structural limitations of the building and the use to be made of the various rooms.

Also it was difficult to explain numerous alterations which were contemplated. After listening to everybody's advice, Mr. Cockrell finally decided to work out the air-circulation system according to his own ideas and see what happened. He frankly expected to find a lot of things wrong with it but figured that it would be worth while to this publication to make a few mistakes and then get the benefit of experience in correcting the faults.

When the system was put into

(*Continued on Page 11, Column 1*)

Entrance to the Business News Publishing Co. at 5229 Cass Ave., Detroit.

Main hall and reception room. The grilles in the picture are at points No. 6 and 7 in the floor plan on page 12.

New Control Placed Outside of Building

MINNEAPOLIS — Recent addition to the line of temperature controls manufactured by the Minneapolis-Honeywell Regulator Co. is the Weatherstat, designed to control temperature within a building, or a certain zone within a building, by its reactions to temperature, wind direction, wind velocity, and solar radiation. It is installed outside the building.

The Weatherstat is applicable to almost any type of building heated by steam or vapor furnished at a relatively constant pressure, steam or vapor furnished intermittently by a gas or oil burner, or hot water under forced circulation. In the latter two types of heating systems, the boiler water must be kept up to a predetermined temperature at all times to prevent a time lag.

This control consists of a mass of iron, sufficient to obtain the necessary thermal capacity. The iron is shaped to contain a thermostatic element with the necessary electric contacts, and is arranged to house a small electrical heating element within the mass.

The unit is mounted in a small waterproof housing, and the entire unit is mounted in a location in which it will be subject to the same weather conditions—temperature, wind direction and velocity, and solar radiation—as the zone or building which it controls.

Heat release from the electrical

(*Concluded on Page 17, Column 1*)

Herb Young Is Appointed Regional Manager For Grunow

CHICAGO—Herbert E. Young, at one time vice president and general sales manager of Grigsby-Grunow Co. and more recently eastern sales manager for Gibson Electric Refrigerator Corp., has joined the General Household Utilities Co. as regional manager with headquarters in New York City, according to H. C. Bonfig, vice president in charge of sales of the Grunow radio-refrigerator manufacturer.

William Humphries, member of General Household's sales staff, will work under Mr. Young, whose territory will include New Jersey, New England, and metropolitan New York.

Kelvinator Plans to Advertise Comfort Cooling This Winter

DETROIT—Believing that its 1935 air-conditioning business will be strongly influenced by the efforts put forth between now and next spring toward building increased public acceptance for the product, Kelvinator Corp. will use fall and winter magazine advertising as a foundation for its next year's summer air-conditioning sales.

Business magazines will receive

(*Concluded on Page 18, Column 5*)

'National' Unit Uses Pressure-Trap-Valve

DAYTON—Featuring use of a pressure-trap-valve instead of the conventional float valve, a line of three household electric refrigerators is being introduced by the National Refrigeration Corp. of this city.

Cabinet of the National refrigerator is of semi-styled design, with a centrally located Mullins porcelain evaporator having an 84-cube capacity in its three trays, semi-concealed hardware, and an exterior-mounted temperature control with eight positions. The company's own reciprocating compressor is used, driven by a ⅛-hp. Leland motor in all models. There is a one-year guarantee on cabinet and unit.

Smallest model is L-46, having a 4.6-cu. ft. gross food storage capacity, and a net capacity of 4.26 cu. ft. It is insulated with 2 in. of Balsam Wool. Overall dimensions: height, 55½ in.; width, 24 in.; depth, 20½ in. Inside dimensions: height, 26 in.; width, 19½ in.; depth, 15¼ in.

Model L-58's gross storage space is 5.86 cu. ft., its net capacity being 5.52 cu. ft. It has an overall height of 60¾ in; width, 26¾ in.; depth, 20¾ in. On the inside, its height is 31 in.; width, 20¾ in.; and depth, 15¾ in.

Largest of the line is L-67, with a gross capacity of 6.76 cu. ft., a net of 6.42 cu ft. Its Balsam Wool insulation is 3½ in. thick. Overall dimensions: height, 62½ in.; width 31¾ in.; depth, 22¾ in. Inside dimensions: height, 31 in.; width, 24½ in.; depth, 16¾ in.

G-E Workshop New Addition to Appliance Line

Reduced Prices Announced On Dishwashers at Convention

By George F. Taubeneck

CLEVELAND—General Electric distributors peeled 30 years off their lives at Nela Park here last week when they viewed for the first time the newest product which has been placed in their hands to sell—the General Electric workshop.

This answer to the small boy's dream is a remarkably complete, small, and compact work bench with electrically driven cutting, shaping, and finishing tools, with which a boy—or his father—can make anything from an old-fashioned 8-drawer bureau for mother to a reclining armchair for grandfather.

Designed to sell for $99.50, the General Electric Workshop was invented by T. W. Frech, president of the General Electric Lamp Works, and developed by his ace designing engineer, Jack Fagan. It folds into a neat oblong package, and may be carried away from the store by the purchaser.

Immediately after its presentation, the distributors swarmed over the models, and had themselves a big time turning out plain and fancy woodwork. Rex Cole did some complicated jigsaw work, Phil Harrison made up a neat, correctly marked pair of dice, and others showed their skill at the bench by producing various articles of handiwork.

Market for this appliance consists of all fathers of growing boys, executives who turn to the manual arts for relaxation, hobbyists, building superintendents who need just such an outfit for maintenance work, mechanics and others who naturally enjoy working with their hands, small repair and carpenter shops run by 'handy men," and by all home owners who have in them a "Mr. Fix-It" strain.

It is considered a "natural" by distributors as a show-window traffic stopper, for it is so simple to demonstrate, and it's so fascinating to watch the demonstrations. R. W. Shenton will direct sales of this new addition to the G-E appliance family.

Outside the introduction of the G-E Workshop, most interesting highspots of the meeting (Camp Specialty Appliance VIII) were the closing remarks of T. K. Quinn, vice president of the General Electric Co., the uproarious wit of Lou Maxon, president of Maxon, Inc., advertising agency, who had the distributors in stitches with the story of how he established an appliance dealership, and the four-scene playlet, "A Rendezvous with Death," with which playright-director Carl Robbins frightened most of his audience into swearing they'd never eat off another plate touched by a dishrag.

This last dramatization of the

(*Concluded on Page 2, Column 1*)

158 Cooling Installations Reported in Chicago

CHICAGO—During the first six months of 1934, a total of 158 new air-conditioning installations were made in Chicago, according to the air-conditioning promotion division of Commonwealth Edison Co. here. This is nearly three times the number made during the corresponding period of 1933. The company states that on June 30, there were 536 air-conditioning systems in service in this city.

Theaters led the list of Chicago establishments making air-conditioning installations the first six months of this year, with 34 buying systems. Private offices were second with 30, and restaurants and taverns third with 25, the report states.

Nema Refrigeration Division Meets Sept. 11 in Chicago

NEW YORK CITY—Members of the Refrigeration Division of National Electrical Manufacturers Association will meet Sept. 11 in Chicago. Exact place and hour are to be announced later.

G-E Reduces Prices On Dishwasher Line

(Concluded from Page 1, Column 5)

sanitation argument for using an electric dishwasher afforded Carl Snyder, valiant and indefatigable promoter of that little known appliance, an opportunity to point out that to Aug. 1, 1934, General Electric dishwasher sales were 285 per cent of the same period in 1933 (highest sales increase of any G-E appliance handled through the Cleveland office) and to announce the following price reductions:

Model A—from $165 to $135; model C from $295 to $245; model D—from $315 to $255; model E—from $335 to $260.

Real reasons for buying dishwashers, stated Mr. Snyder, were that dishwashing is a most disagreeable job, that it is hard on the hands, and that ownership of a dishwasher carries with it unusual pride of possession.

'Buy-Now' Reason

The *buy-now* reason, though (the one which enables the conscientious housewife to *justify* the purchase) is sanitation. Hence General Electric salesmen will hammer hard the story that germs breed with incredible rapidity in dishrags, and that only an electric dishwasher can use water hot enough to destroy all disease-bearing microbe life.

"Electric refrigerator sales usually fall off in July and August," Manager Zimmerman said. "However, our sales have kept up to such an extent that we have been, and are, running our factories at full capacity since the early part of the year. Right now, we are behind in production.

"Sales records show a 50 to 100 per cent increase in business of distributors over a year ago. We enter the second season of the year with an improvement in dealer morale which augurs well for business in the closing months. We are banking strongly in this respect on our coverage, for we have G-E appliance displays in 58 per cent of the towns of 1,000 population or more.

Modernization Program

"The government's modernization program should be a great help in merchandising the all-electric kitchen," he pointed out. "The market for the complete kitchen is now much wider open. If we could install an electric kitchen in one house on every street we would be overwhelmed. Yet such a program is not impossible of realization with the financial aid now available to home owners through federal agencies."

Discussing the National Housing Act, General Benedict Crowell, director for Ohio of the National Emergency Council, declared there are today 16,000,000 houses and buildings in the country which need repair and improvement. Of this number, he said, 3,000,000 are in need of structural changes.

Balanced Selling Job

"With the government insuring the loans which building owners may make of financial institutions," he said, "we can expect a big revival in the building trades. The American wage earner is the best credit risk in the country. Now the home owner may borrow from $100 to $2,000 to make needed repairs, and we hope that hundreds of thousands of building trades craftsmen will be put back to work."

A. L. Scaife, manager of the retail division, stressed the importance of a *balanced job* of selling (that was the theme of the meeting) and declared that the man power of the retail selling organization was holding up, having passed, in members, the peak of 1931.

G. D. Kobick, manager of the apartment house division, spoke on the possibilities for equipping apartment houses with electric refrigerators and electric ranges in conjunction with the government's modernization program.

Department Store Report

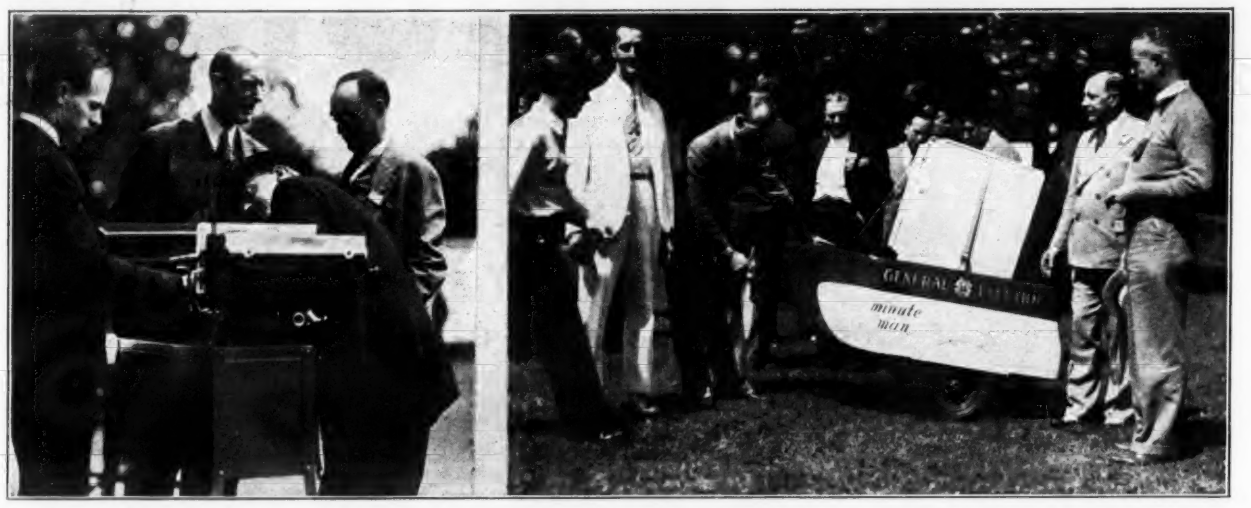
The distributors' committee on department store operations, headed by L. H. Miller and advised by Ralph Cameron, submitted a report containing the following conclusions and recommendations:

1—Unanimously agreed that the business coming to the distributor from the department stores represents plus volume to the extent of 90 per cent or more.

2—Where department stores handle competitive lines but are given proper attention by the distributor principal, G-E enjoys from 35 to 60 per cent of the total refrigeration business in units and an even greater amount in dollars and cents.

3—The trend of the department store is to limit the variety of electric refrigerators handled to the major, nationally advertised brands, since their experience with the secondary lines has not proven satisfactory

Two New Toys for General Electric Distributors



(1) R. W. Shenton (right) answers question about the new G-E Workshop. (2) Art Scaife demonstrates the "minute men" delivery trailer to a flock of interested distributors and sales promotion men.

4—Of the stores reporting, 11 per cent used the meter plan of selling, but the tendency seems to be away from the meter plan. From questionnaires received it seems that results either were very good or very bad on this type of selling. The points where it was most successful were where it was being presented for the first time.

5—Sales in 50 per cent of department stores reporting, result from floor traffic exclusively. The other stores combine floor selling with outside selling. Approximately 60 per cent of department store sales were closed on the store floor while 40 per cent were closed in the home.

6—Commissions paid department store salesmen vary considerably. However, in the majority of cases it ranges from 8 to 10 per cent. The committee's recommendation is that 8 per cent be adopted as the standard compensation for the salesmen in distributors' resale operations through department stores.

7—Of these department stores handling General Electric refrigerators, 49 per cent have kitchens installed and operating. The committee recommends the kitchen background be made the center piece of a well identified General Electric appliance department in each department store.

Special Prices for Sales

8—The distributors' committee said it recognized the importance of being able to offer merchandise at special prices periodically to department stores for their sales, and suggested that General Electric arrange to make such specials available at least twice a year, preferably spring and fall. This special should be made available at the same time and at the same price to all the distributors' various trade channels.

9—The committee recommended that in metropolitan areas the distributor handle, deliver, and service for the department stores.

10—The committee recommended that department stores write their own advertising copy for the newspapers thereby retaining the store's individual personality in their advertising, but conforming to General Electric policies.

11—It developed that repossessions through department stores on General Electric refrigerators were practically negligible.

Economy with Electricity

C. M. Ripley, the model home man from Schenectady, talked on the subject, "It Costs Less to Be Modern," showing from his own experience that the installation of electrical appliances in the home not only brought added conveniences and comforts but reduced living costs to a marked degree.

Sales Promotion Manager Walter J. Daily staged an elaborate presentation of the advertising and sales promotion helps he has made available to G-E distributors and dealers for the current season, and outlined the company's advertising program for the balance of the year.

The feature of the Daily presentation was the introduction (in person) of the Bliss Family to the convention. The Bliss Family, around which is built G-E's major direct mail activity of the year, is typical of the more than 2,000,000 progressive American families who own and enjoy General Electric kitchen appliances. The family a cast of six, presented an amusing playlet, portraying the advantages of owning an electrical home.

Bliss Family Mailing Pieces

One of Mr. Daily's new Bliss Family mailing pieces tells how Mrs. Bliss finally had to shoo the family out of the kitchen—it was the most popular spot in the house after it was remodeled on the G-E plan. The folder shows a typical G-E kitchen, tells how easy it is to own one.

How guests delight in coming to the Bliss home for dinner is the theme of another mailing folder which features the General Electric range. After a meal cooked on the Bliss range "you realize you've enjoyed a new thrill in cooking," it says.

The G-E refrigerator stars in a third brochure. A little story tells how the Bliss Family, on its first dinner visit to the home of its newly wed daughter, knew that "daughter's home life was off to a fine start . . . for there in the new kitchen stood the right sort of refrigerator—a G-E." A list of the product's features follows.

Still another piece portrays the ease an electric range lends to cooking—not only that, the cooking is better. "It's no secret in the Bliss Family," reads the copy, "that Mother gives her General Electric range a big share of the credit for those delicious meals everybody raves about." And, "Nothing could add more pleasure to your cooking . . . nothing could add more style to your kitchen."

Dishwasher Promotion

Dishwashing takes the center of the stage in a fifth folder, which says, "It is so utterly needless to go on washing dishes for life when the General Electric dishwasher will do so much better at so little cost." Operation and features of the unit are described. Teaser on the folder's address side indicates the theme of the entire text. Scene: The Bliss Family kitchen. Time: Five minutes after dinner. Cast: Off to the movies.

Another dishwasher promotion piece features banishment of the *thought* which constantly haunts a woman's mind that there are dishes to be washed Here is the meat of the copy: "When you look into your china closet do you see shining stacks and rows of lovely china and crystal . . . or is your pride in such possessions all clouded up by ghosts of endless weary hours of dishwashing and dismal skeletons of festive evenings drowned in the gray depths of morning-after dish water?"

Penguin Window Displays

As to window-display materials being prepared for use by G-E dealers and distributors during September and October, Mr. Daily said at the convention:

"During the months of September and October the penguin bids fair to be America's most popular bird. There are two reasons for this. First, public interest in Admiral Byrd's expedition in the Antarctic (the home of the penguin). Second, the release of a Silly Symphony by Walt Disney (of 'Mickey Mouse' and 'Three Little Pigs' fame) built around the antics of 'Peculiar Penguins.'

"Millions of people will laugh at Walt Disney's creation and his interpretation of penguin characteristics and their almost human traits. And millions of people will be more penguin-conscious than ever before. It is a 'natural' for timeliness in attracting public attention to your store and to the General Electric refrigerator."

During his presentation Mr. Daily made the statement that General Electric refrigerators have given 40,000,000,000 hours of service.

They Laughed

Lou Maxon, whose wit convulsed G-E distributors, wearing a Fascist black shirt.

All Star Review Cast

The All Star Review, participated in by the 36 winners in the All Star Discovery Drive, was staged on the evening of the opening day under the direction of Jean De Jen, campaign director.

Members of the cast were:

Star Distributors—H. A. Pendergraph, Tennessee Appliances, Inc., Nashville; R. E. Browne, Perry-Browne, Inc., Columbia, S. C.; Albert Ahrens, Albert Ahrens Co., Oklahoma City; H. H. Courtright, Valley Electric Supply Co., Fresno, Calif.; D. P. Dinwoodie, Electrical Housekeeping, Inc., Cleveland; A. W. Merriam, A. Wayne Merriam, Inc., Schenectady; E. P. Cook, E. Pulver Cook, Inc., Providence, R. I.; Rex Cole, Rex Cole, Inc., New York City; L. D. James, James & Co., St. Louis; P. H. Ervin, Electrical Housekeeping, Inc., Omaha; W. E. Graham, GESCO, Butte, Mont.

Star Retail Sales Managers—W. L. Burton, St. Louis; K. L. Hampton, Fresno, Calif.

Star Wholesale Sales Managers—J. M. Craig, Columbia, S. C.; D. A. Kelly, Omaha.

Star Commercial Sales Managers—L. C. Kohlman, Chicago; W. H. Fuller, Dallas, Tex.

Star Apartment House Sales Managers—J. J. Massimi, New York City; R. T. Foree, Jr., Louisville.

Star Utility Merchandise Managers—G. L. Jackson, California-Oregon Power Co.; G. B. Richardson, Texas Power & Light Co.

Star Sales Promotion Managers—Sam Nides, Chicago; G. M. Craig, Boston.

Star Dealers—S. R. Himsel, Mt. Horeb Hardware Co.; E. M. Roberts, Jr., Roberts Electric Co.

Star Domestic Salesmen—J. B. Davis, Fresno, Calif.; G. D. Hunter, Richmond, Va.; T. J. Trunnell, Jr., Louisville.

Star Commercial Salesmen—Thad B. Hinnant Columbia, S. C.; George Irwin, Boston.

Star Water Cooler Specialist—W. C. MacDonald, Chicago.

Star Retail Supervisors—H. H. Landemare, Newark; J. R. Segel, Boston; Ray Ryan, St. Louis.

Star District Managers—Fred Harvey, Cleveland; T. B. Allen, Atlanta.

Knights of Refrigerania

In announcing the new fall sales campaign, Knights of Refrigerania, Jean De Jen emphasized the experience of the General Electric Co. that a sales campaign is a stimulus which produces business when it is needed most. As in previous sales campaigns, winners in the Knights of Refrigerania Drive will be selected on the basis of a balanced sales job (meaning that sales of other appliances must be proportionate to sales of refrigerators).

The Knights of Refrigerania ritual was exemplified dramatically by De Jen, assisted by star distributors and salesmen in full regalia. It was announced that the new contest would run from Sept. 1 to Oct. 31.

Range Presentation

Wednesday's program was devoted to presentations by the range, commercial, central station, and dishwasher divisions.

The electric cooking story was presented by J. R. Poteat, manager of the range division. Cookery demonstrations were offered by Fred Cuffe of the range division, and Clara Dean, member of the kitchen section staff, General Electric Institute.

Edwina Nolan, home service director of the General Electric Institute's kitchen section, spoke on the value of home service departments as operated by distributors.

H. H. Bosworth, manager, central station division, treated "Central Station Business," and W. E. Landmesser, commercial division manager, analyzed the commercial refrigeration situation.

Landmesser said a real effort was being made toward standardization in the commercial division. Distributors and dealers were promised more help on commercial problems, especially on cost systems.

He showed the distributors cost analysis charts of the commercial business of several distributors, revealing some of the reasons why some distributors *make* money on their commercial operations while others *lose* it.

Ft. Wayne Factory Enlarged

He stated that the G-E Ft. Wayne factory was being enlarged to care for increased commercial business. A new addition is to be erected at a cost of $165,000. Other speakers on the commercial program were Malcom Bard, Harold Hulett, W. M. Timmerman, and Tom Millot. "National user" business (chain stores and the like) was the subject considered by the latter.

Talking about the difficulty of filling various orders for condensing unit combinations, Hulett observed that 860 different combinations have been shipped out of Ft. Wayne this season by the G-E commercial department.

Mr. Bard discussed the advantages of a uniform Equipment Specifications Cost and Installation Order, and Mr. Millott talked about prospects for national user business.

Figure Jobs Accurately

"The commercial refrigeration art has advanced to a point where it is possible to figure jobs accurately," declared Mr. Timmerman.

"If we don't, either the equipment won't function satisfactorily or competition will undersell us. The commercial engineer should not just sit at a desk and work his sliderule, however. He should be of definite sales assistance, and can be invaluable to the salesmen if he is allowed to contact the engineers on the purchasing side of a job."

Reduction in Repossessions

In reviewing distributor operations, C. G. Smith, manager of the credit and financial division, said there had been a reduction in the number of repossessions during the first six months of the year, due probably to more efficient credit departments and to less unemployment.

A complete new line of G-E laundry appliances—washers and ironers—was introduced by speakers from the Bridgeport, Conn., merchandise department. They also had a new line of vacuum cleaners to show. Bridgeport speakers were J. L. Busey appliance sales manager; John M. Wicht, manager, home laundry section; A. L. Atkinson, manager, vacuum cleaner section; J. W. McIver, manager, sales promotion; D. C. Spooner, Jr., assistant appliance sales manager.

Small-Town Dealers

A. A. Uhalt, manager, dealer division, spoke on the importance of the small-town dealer, proved by charted figures how the dealer has improved his status in the G-E sales picture (as compared with utility sales and distributor-controlled operations nominally the two biggest factors in G-E resale business), and outlined plans for increasing the number of "Ten Best Home Servants" dealers next year.

Bill Chandler, Uhalt's assistant, talked on the Sales Pilot Coach Plan of Selling, and introduced three outstanding coach operators — Grove Woolley of Tupelo, Miss.; Bill Dodson, Ada, Ohio; and H. S. McKeown, Spartanburg, S. C.

Balancing Field Stocks

N. B. Ronning, manager of the production and distribution division, outlined plans for keeping production, warehouse stocks, and shipments in order, and presented charts showing how G-E field stocks compared with those of other manufacturers each month of the year.

John Klenke and G. F. Mosher of General Electric Contracts Corp. were among the closing speakers, as were Chris Steenstrup, designing engineer from Schenectady and famous advocate of the Monitor Top, and Sales Division Manager A. M. Sweeney.

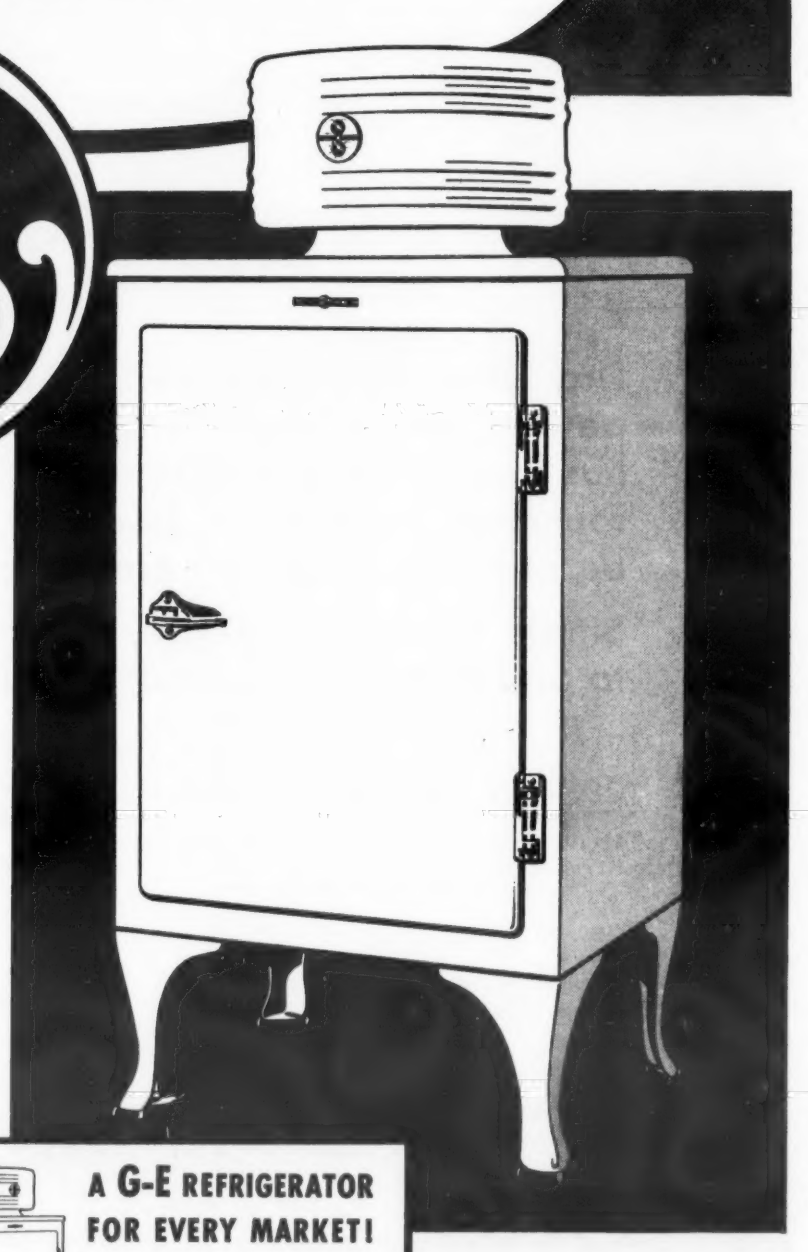
Making a dramatic and unexpected showing of the entire line of General Electric appliances, which formed a row longer than the distance most of the distributors could have run without puffing and blowing, Mr. Sweeney talked inspirationally for several minutes.

He pointed out the opportunity for plus business afforded by the government's home modernization program, and exhibited Cleveland newspaper advertisements, run by banks and department stores, ballyhooing the administration's renovation idea, and suggesting that loans won't be difficult to negotiate.

AFTER YEARS

97% of G-E Refrigerators in use 5 years are still giving satisfactory service to their original owners... an unparalleled record of customer satisfaction!*

**From a survey made this year in 10 principal cities by R. L. Polk & Co. It does not include those General Electric Monitor Top Refrigerators still giving satisfactory service but which have been disposed of by their original owners.*



GENERAL ELECTRIC Monitor Top Refrigerators continue to give satisfactory, dependable, trouble-free service *year after year.* Because of its unparalleled performance record General Electric now offers 5 years' protection on the Monitor Top sealed-in-steel mechanism for only $1 a year—the standard 1 year warranty and 4 more years' protection for only $5.

Owners tell their friends... build good will for the G-E... pave the way for sales to others. Moreover, G-E Refrigerator owners themselves are prospects for other major kitchen appliances—a General Electric Range or a General Electric Dishwasher. General Electric offers the complete kitchen line, with a wide range of models. There's a model to fit the needs of every family, every income. Thus the sale of a refrigerator opens the way for the sale of additional appliances . . . and brings *additional profits* to the G-E dealer.

The new G-E Monitor Top Refrigerator with its famous sealed-in-steel mechanism is recognized as the standard of excellence. Modernly styled, and with its long record for dependable service at low cost, it enjoys widespread public preference.

The new G-E Flat-top Refrigerator offers quality, distinctive design and convenience features unmatched in conventional type refrigerators.

And, now the new G-E Liftop Refrigerator with its low operating cost is offered at a price that appeals to the big, mass market. The economy and convenience of G-E refrigeration is placed within reach of every wired home in the country.

With many types of electric ranges and dishwashers . . . with a kitchen planning service for customers who wish to remodel and modernize their kitchens . . . General Electric rounds out a complete line of electrical home servants unmatched for dependable performance, convenience features, low cost... and built by the world's largest electrical manufacturer. Write or wire for details of the General Electric franchise. General Electric Company, Specialty Appliance Sales Dept., Section DF83, Nela Park, Cleveland, Ohio.

A G-E REFRIGERATOR FOR EVERY MARKET!

With the Monitor Top, Flat-top and Liftop models General Electric dealers can offer a refrigerator for every sized family, every income! Price as low as . . . . **$77.50** plus freight

Increased interest in home modernizing offers a golden opportunity to General Electric dealers to sell complete kitchens and thus multiply sales and profits. The General Electric Institute helps dealers to do this.

GENERAL ELECTRIC

ALL-STEEL REFRIGERATORS

AIR CONDITIONING

New Maryland Community Has Houses Designed for Air-Conditioning Systems

SCHENECTADY—Two of the newest trends in residential developments—coordinated architectural treatment and air conditioning—are strikingly exemplified by the Hamlet, a suburban community recently opened to the public in Chevy Chase, Md.

This group of eight modern homes, each designed to present a pleasing and harmonized variety with respect to the others, is the first to be completed of a number of similar projects which the Chevy Chase Land Co. has planned for this territory, a subdivision of Washington, D. C., located between the Chevy Chase Club and the Columbia Country Club.

Within the houses, comfort, convenience, and cleanliness are emphasized. All are equipped with General Electric air-conditioning heating plants, for which G-E oil furnaces serve as the basic units. Provision has also been made in each house for the addition at a future date of summer air-conditioning equipment.

In fact, one of the houses now being exhibited as a model home has already been equipped with a G-E cooling installation. Many other electrical conveniences, including a G-E range and refrigerator in each kitchen, were provided.

In the design and construction of this suburban development, special attention was paid to the coordination of the architectural treatment and to the harmony of the finished development. The houses in the Hamlet are grouped to avoid the regularity and monotony of the ordinary type of suburban development. Their arrangement gives a sense of space combined with privacy.

Garages and service entrances are reached from a large inner paved court where automobiles may be parked. Each house has part of its garden secluded by a hedge or wall.

Walled kitchen yards, in which laundry-drying facilities may be placed, enable the houses to present as pleasing an appearance from the court as from the street. In fact, despite the large number of electrical conveniences used in the development, not a power line or pole is to be seen, for all wires in this community, including telephone, are run underground.

Norma Shearer's Home Is Air Conditioned

SANTA MONICA, Calif.—Home of Norma Shearer, picture star and wife of Irving Thalberg, movie producer—has been equipped with a Carrier air-conditioning system specially designed to meet the star's requirements.

Aerofin Book Gives Cooling Unit Data

NEWARK—Prepared especially for consulting engineers, architects, and refrigeration contractors, a new booklet-bulletin has been issued by the Aerofin Corp. of this city to introduce its new line of standardized lightweight fan system cooling surface for direct expansion refrigerants.

The coils are first described and illustrated, and then pictured in typical installations. Greater part of the booklet, however, is given over to detailed information and data in the form of tables, charts, and diagrams, showing how to apply the new cooling surface and what particular types to use on given jobs.

Feature of the bulletin is presentation of two problems, and proper methods of their solution, as to selection of Aerofin direct expansion units. Diagrams and pictures accompany the text in which these problems are worked out. Pasted on the back cover of the publication is a Carrier psychrometric chart. The bulletin is identified as D.E.-34.

Morris Plan Bank Has Air Cooling Installation

RICHMOND, Va.—First bank building in this city to be air conditioned is the Morris Plan Bank, which is conditioned throughout, including both the space used for banking purposes and that for rent to other business firms. Carrier equipment is used.

The system supplies approximately 19,000 c.f.m., and has a 45-ton refrigerating capacity. It provides conditioned air for nearly 300 persons distributed over 15,436 sq. ft. of floor space.

Preparing Units for Long Life

Pistons, connecting rods, and crankshafts of Westinghouse air-conditioning condensing units are "broken in" for 24 hours in a bath of oil.

* * *

Westinghouse Runs Condensing Units in Oil Bath for 24-Hour Period

By J. W. Speer, Manager, Commercial Air Conditioning Products, Westinghouse Electric & Mfg. Co.

PRECISION methods are employed throughout Westinghouse's new manufacturing aisle in which air-conditioning compressors are made. Automatic machines, amazing the layman in their almost-human operation, are used wherever practical. And the units are assembled in a specially constructed enclosed room in which even the air is washed and filtered before it enters.

An example of the attention given to manufacturing details is the compressor piston assembly. The piston is cast from special grade close grained iron. Selected castings are rough turned, finish turned, and ground with tolerances of a half-thousandth of an inch. Piston-pin holes are drilled, bored, and honed.

Piston pins and connecting rods are put through a similarly exacting manufacturing process—kept within the same tolerances. And then pistons, pins, and rods are assembled into sets.

Sets are not made up at random, but parts are matched, like a matched set of golf clubs, so that in each assembly, perfect fits are assured.

Crankshafts, drop forged, are heat treated, turned, ground, drilled—given a static and dynamic running balance test, and assembled with matched pistons.

Follow Automobile Methods

Automatic machines speed up production at many points of manufacture. In one operation, for example, a score of holes are drilled at one time in the cylinder block. On another machine, a half-dozen surfaces are turned, bored, and faced from one set-up.

After the compressor parts are machined, they are given a double washing process that is unusual for its thoroughness in commercial manufacturing, before they are brought into the assembly room.

As stated above, this room is sealed from outside dust and dirt, for the room must be kept perfectly clean. Otherwise there is always a possibility of dirt getting inside the compressor and causing trouble.

"Run-In" in Oil Bath

The pistons, connecting rods, and crankshafts are assembled in the cylinder castings and for 12 hours they operate in an oil bath, for the dual purpose of running-in and further cleaning. Then the seal is installed and for another 12 hours, the unit is operated in the oil bath.

Remember the first 500 miles of a new automobile—the snail-like pace, the oil in the gasoline, the care taken with lubrication? All of this was so necessary for long life and satisfactory operation.

The oil bath running-in process for Westinghouse condensing units is intended to take the place of painful experience. The factory runs them for the "first 500 miles" under the watchful eye of skilled operators, so that the user can start right out at full speed.

Five Tests to Prevent Leaks

After running in, the assembly is completed and then comes the search for leaks. Five separate times each unit is inspected—first at room temperature, and then after heating in an oven—with air pressure and gas pressure much greater than ever encountered in actual service—they are thoroughly tested when idle and then while running.

And when the inspector is finally satisfied that no greenish blue flame will show up in the blow-torch test—the unit is approved for service.

3 Refrigeration Machines Cool Restaurant

YUMA, Ariz.—Recently installed in the Valley Cafe here was a Carrier air-cooling system employing three refrigeration units, one or all of which may be used, depending upon the cooling load at a certain time. To effect operating economies, the cafe's roof has been insulated with 2 in. of rock wool. The system also makes use of a cooling tower on the roof to cool condenser water.

Atlanta Cafeteria Uses Carrier Cooling System

ATLANTA—S. & W. Cafeteria here has installed a Carrier cooling system. Clare & Co., Carrier dealer, made the sale.

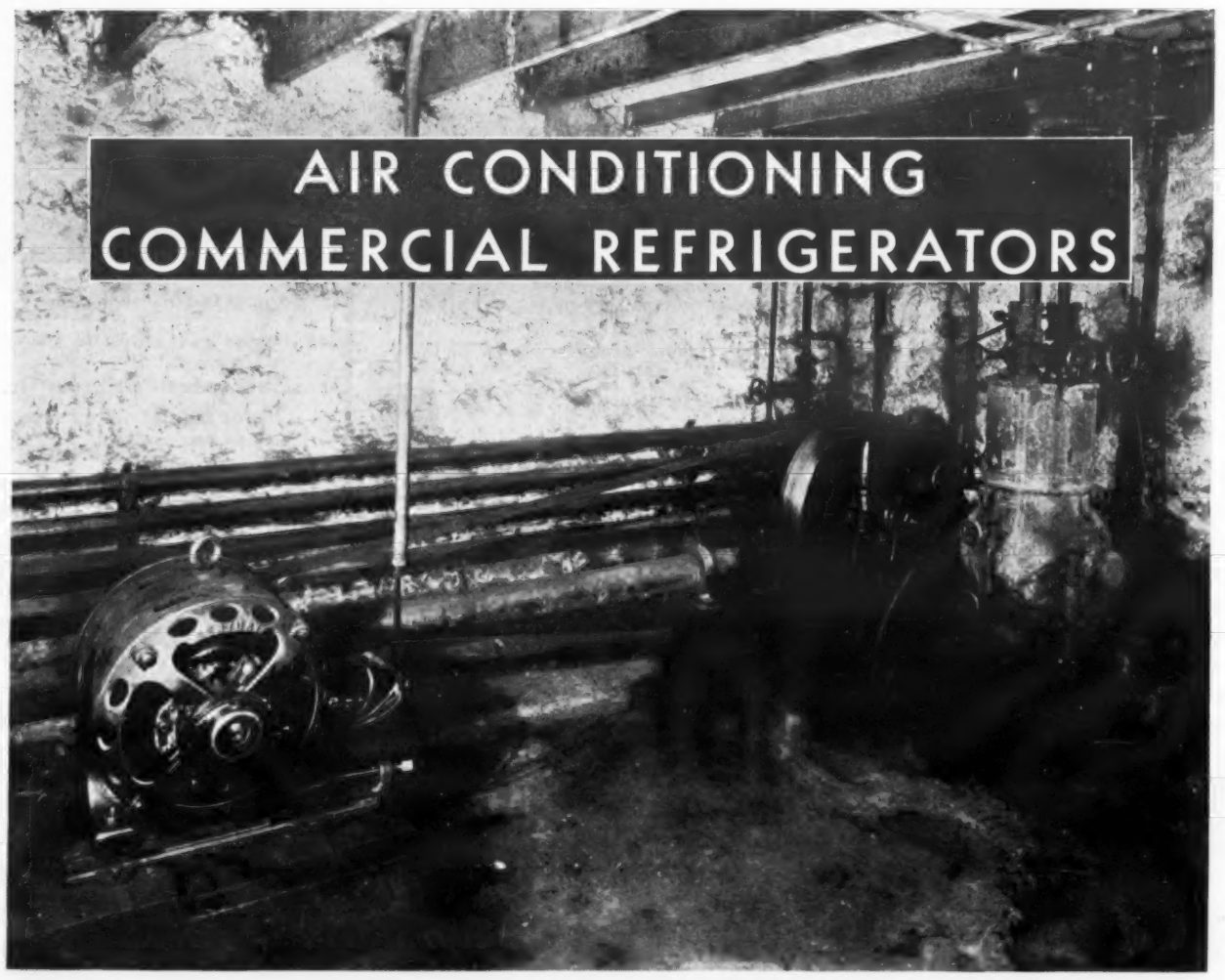
No Better Evidence!

Day after day—for over 22 years, the 3 horse power Century Single Phase Motor illustrated below has been driving a refrigerating unit in damp surroundings—*without a let-up* . . . . No more could be said about Century performance.

Single Phase, Polyphase, Direct Current . . . . Up to 600 H. P. . . . . Consult Century Engineers.

CENTURY ELECTRIC COMPANY
1806 Pine Street , , , St. Louis, Mo.
Offices and Stock Points in Principal Cities

Century MOTORS



RELIANCE FREON UNITS

1/3 to 30 TONS DAILY CAPACITY

EXPORT DIVISION
A. J. Alsdorf Corp., 223 W. Jackson Blvd., Chicago, Ill., U. S. A. Cable: Alsdorf-Chicago

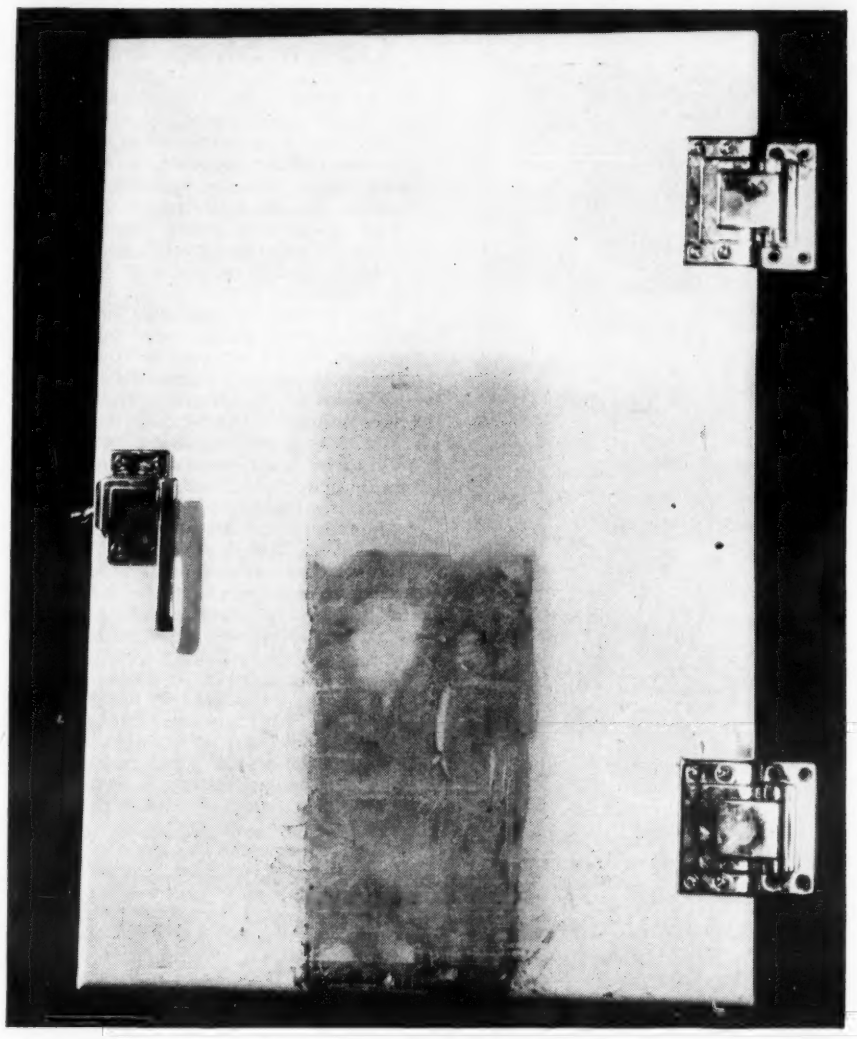
Reliance condensing units are correctly designed and are made by a company that has specialized in refrigeration since 1918. Their high efficiency makes them ideal for air conditioning and commercial installations. Compact, rugged—will give years of trouble-free service.

GALVANIZED STEEL COILS

Made of steel. Positive METAL-TO-METAL contacts. Will not lose original efficiency because of oxidation between tubes and fins.

RELIANCE
REFRIGERATING MACH. CO.
3409 N. Kedzie Ave. Chicago

FOR AIR CONDITIONING



Greased every morning for 13 months in rigorous Florida climate, this DULUX-finished refrigerator door showed no sign of rusting, cracking, peeling or softening. Wiped clean at end of test, original surface looked like new.

Another reason

WHY MORE THAN

800,000

HOUSEHOLD MECHANICAL REFRIGERATORS

have been finished with

DULUX

REG. U. S. PAT. OFF.

IF anybody starts suggesting to you, salesmen of DULUX-finished refrigerators, that some other kind of finish is more popular or satisfactory for refrigerators, just ask him to match this record: *Eighteen months ago DULUX was used as a finish on refrigerators for the first time . . . today, a year and a half later, more than 800,000 of them have been finished with DULUX.*

Before being sufficiently satisfied with its new refrigerator finish to ask manufacturers, dealers, and housewives to accept it, du Pont subjected it to every conceivable sort of test.

The Grease Test was a gruelling one. It was conducted in Florida, because atmospheric conditions there are unusually severe. An actual refrigerator door, finished with DULUX, was used. Every morning for thirteen months, butter, bacon grease, or vegetable fat was rubbed on three sections of the door. Once a week two of these three sections were cleaned with soap and water and then re-greased. One section, greased every morning, was not cleaned at all until the end of the test. Two additional sections were exposed to the Florida air and moisture and not cleaned off at all. *After a year and a month, when the door was finally washed clean, not a single sign of rusting, cracking, peeling, or softening had appeared!* The lustrous white beauty of the original surface returned immediately.

The result of that test means much to a housewife. She knows how difficult it is always to keep buttery, greasy fingers from touching the refrigerator door or other surface. Yet here is ample proof that she need not worry, *provided* her refrigerator has a DULUX finish.

These facts

ABOUT DULUX HELP YOU SELL REFRIGERATORS

1. ***A hard, but flexible and tenacious finish*** **that does not chip or crack under hard blows and surface tension. It is the result of a new, elastic vehicle — a du Pont development.**
2. ***A durable finish*** **that resists moisture and protects against corrosion.**
3. ***A finish with exceptional resistance*** **to household oils, greases, acids, and abrasives.**
4. ***A beautiful finish with a texture, depth, and gloss*** **unknown in other finishes.**
5. ***A finish with almost perfect whiteness*** **which remains under long outdoor or indoor exposure.**

The more you, as a salesman, know about DULUX, the easier you will find selling refrigerators protected with this amazing new finish. We have prepared a booklet, called "DULUX for Refrigerators," which describes the many severe tests conducted both in the laboratory and in actual service to make sure that DULUX would stand all kinds of abuse and yet retain its good appearance. This booklet will provide you with useful selling ammunition and tell you why it is that only eighteen months after DULUX was used as a refrigerator finish for the first time, more than 800,000 household mechanical refrigerators were finished with it. Send for your booklet today by writing to E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware.

DU PONT REG. U. S. PAT. OFF. **DULUX** REG. U. S. PAT. OFF. *for refrigerators*

AIR CONDITIONING

10 Installations Made by York At A Century of Progress

YORK, Pa.—A veritable cross section of the progress that has been made in the development of mechanical refrigeration during the last 100 years is demonstrated in the installations of York refrigerating and air-conditioning equipment at A Century of Progress, according to York Ice Machinery officials who have just surveyed the Fair.

These installations, to the number of 10 with 17 York compressors ranging from fractional tonnage to 80 tons capacity, represent in themselves "A Century of Progress," and play an important part in the "behind the scenes" operation of several leading exhibits at the Fair.

The Triangle Restaurant, within the Fair grounds is made cool and comfortable for its multitudes of patrons by York air-conditioning equipment, which maintains an interior temperature of not over 80° F., with relative humidity at 50 per cent, when outside temperature stands at 95° F. or higher.

The heart of the cooling system, a 75-ton York compressor, operates in full view of the restaurant's patrons, being enclosed in a glass case near the entrance, affording a visible demonstration of the application of mechanical air conditioning to personal comfort.

The Ford theater, located within the several acre park which comprises the mammoth exhibit of the Ford Motor Co., is furnished and decorated on a par with Broadway's finest, and is cooled by a York air-conditioning system.

One of the most interesting exhibits at the Fair in which York refrigeration plays an important, if unseen part, is that of Armour & Co. Within the main room of this exhibit is a huge glass case, in reality a glass-enclosed room, large enough to contain 12 titian-haired girls, operating the meat cutting and packing display.

As one approaches this glass enclosure, one becomes conscious of a distinct and pleasing aroma of chipped beef. This aroma, which attracts many visitors, is by no means accidental. It is, on the contrary, deliberately created by means of a York B-400-D-3 air-conditioning unit.

By means of this equipment, an unusual amount of fresh air is brought in from the outside, blown into the cases where the chipped beef machines are operating, through concealed ducts, and exhausted into the main room, thus giving a pronounced and distinctly pleasing chipped beef aroma to the entire outside area of the exhibit, and providing comfort for the girls operating the machines within the glass enclosure.

The Willard Storage Battery exhibit makes use of an unique display feature by freezing its batteries in huge cakes of ice, and demonstrating that they can be charged and operated while so frozen in solid ice. By means of a York Freon water-cooled compressor, a special storage room is maintained at low temperature for the storage of these ice blocks.

The manufacturers of Coca-Cola bottle and sell their cooling beverages on the spot to many thirsty visitors. A York stainless steel surface cooler, glass enclosed, cools the water which is carbonated at the rate of 300 gals. per hour, while a York Freon compressor unit and float control equipment maintain temperatures at predetermined levels.

At the exhibit of the General Cigar Co., where cigars are actually produced from the green leaf stage to the finished product, York refrigerating equipment plays an important part in processes essential to the proper curing of the tobacco leaf. At this exhibit are installed two York Freon 4x4 5-hp. compressors, using 280 ft. of coils for a spray type unit.

Flower displays in the Horticultural building are kept fresh and sweet, as is the food in the restaurant of that building by York refrigeration and air-conditioning apparatus. The food compartments in the restaurant in the Italian Village, known for its real Italian cooking, is also kept fresh, cooled by York commercial refrigeration.

The commodious library of the Time-Fortune Pavilion, one of the most popular spots at the Fair, and a haven of rest for many a tired sightseer, is kept comfortable by means of six York floor-type air-conditioning units, attractively finished in harmony with the artistic interior.

This, like the installation at the General Cigar Co. exhibit, where York equipment cools and humidifies the air for the protection of workers and important manufacturing processes, is purely a "comfort" installation.

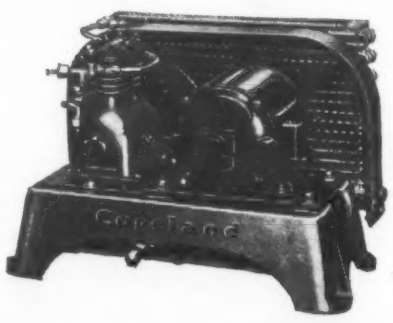
By a similar application of York air conditioning for human comfort, in which all mechanical elements have been concealed or artistically designed to form a part of natural or artificial decorative effects, the exhibit of the State of Florida, in the Hall of States, has been made as refreshing in its atmosphere as the native state itself.

50 New Air Conditioners Reported in Newark

NEWARK—Between Jan. 1 and the middle of July of this year, 50 air-conditioning installations were made in the territory of the Public Service Electric & Gas Co., headquartered here, according to its air-conditioning department. This represents a 73 per cent increase over the same period last year, when 29 systems were sold.

While sales to restaurants, offices, and private homes have constituted the majority of installations this season, systems were also placed in a funeral parlor, night club, church, sports arena, and candy store.

Adaptability



For every refrigeration need there is available a Copeland condensing unit of suitable size and performance characteristics.

To choose from are 21 Copeland Commercial Models from 100 lbs. to 3250 lbs. I.M.E., 1/6 to 3 H.P., one, two and three cylinder compressors, air or water cooled.

Sales are never lost by Copeland distributors on account of failure to supply correct sizes. In addition to conventional models there are three "IC" models included in the line.

Copeland's record in service is known wherever refrigeration is used with the result that selling often means only the specification of the correct unit and in the Copeland line it is available.

COPELAND DOMESTIC REFRIGERATION

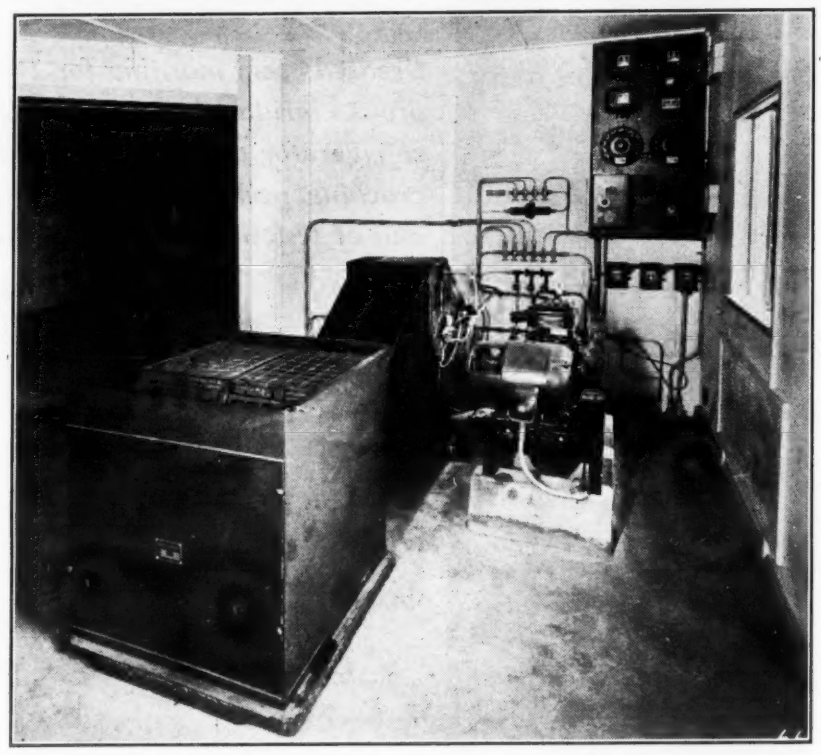
This is furnished in seven household models in Porcelain and Porceloid finishes; capacities 4, 5.4, 6.5, and 7.6 cu. ft. net food storage. Style, Convenience, Economy and Dependability recommend them.

Copeland is daily adding to its distributor organization, aggressive merchants who realize that Refrigeration is a year-round business and that Copeland can satisfy every need.

COPELAND REFRIGERATOR CORP., Mount Clemens, Mich.
Division of Winslow-Baker-Meyering Corp.

Copeland
DEPENDABLE *ELECTRIC* REFRIGERATION

Display Sells Air Conditioning



Clevelanders who visit the model home in the Builders Exchange can study the operation of the Frigidaire system installed in the garage.

'House in Sky' Uses Frigidaire System

CLEVELAND—Air conditioning is being demonstrated to Clevelanders by newly installed equipment in The House of the Sky, a model home of full dimensions built some time ago in the Builders Exchange, one of the major buildings in the Terminal development.

According to H. H. Kennedy, district manager for Frigidaire with headquarters in Cleveland, and S. M. Buckingham, vice president of Building Arts Exhibit, Inc., a cooperative concern charged with promoting the interests of the building trades, building material, appliance and equipment manufacturers, while all who feel the comforts of air conditioning in the model home don't buy, all who feel have buried in the back of their heads the desire to buy when and if they can assemble the wherewithal.

"If they can feel it, you can sell 'em! It's all much like the man who starts thinking about a new car months and sometimes a year or more before he actually makes the purchase," in the opinion of these two men.

The house is of Normandy design so far as the exterior is concerned, but of modern motif within. It has a model kitchen, and complete, year-round air conditioning, with some rooms supplied by a central duct system, some by unit conditioners for which the compressor is remotely installed, and the remainder by self-contained units—an installation made to show visitors the various ways in which air conditioning may be adapted to residences.

For four years, the House in the Sky has been a feature to which Clevelanders and visitors to the city have flocked. In fact, 760,000 persons were clocked through its front door up until Aug. 1.

But only during the last four months has the home been air conditioned, and if one person has spent hours in it to escape the enervating heat and humidity that visited Cleveland as well as the rest of the country, thousands have delayed departing using every pretext to remain longer than the stream of visitors permits.

"If they can feel it, they go away sold on air conditioning," said Mr. Kennedy. "At first, we were skeptical as to whether the operating display of air-conditioning equipment would be worth while from an advertising standpoint. It has, and in a sensational way.

"Thirty thousand persons visited the house and felt the cool, comfortable air the first 30 days after the air-conditioning equipment was installed. That's an average of 1,000 a day.

"People from everywhere have visited it. From the cards each visitor signs, we find that 25 per cent are residents of Cleveland, 25 per cent from our home county, 25 per cent from the rest of Ohio, and the remaining quarter from the rest of the nation and the world.

"It is surprising how many study the mechanical layout in the garage, where the central compressor is installed and the air sent through the ducts is filtered. The compactness of the installation and the fact that there never is an attendant with it supervising the operation impresses visitors with the fact that air conditioning is something practical, not mysterious and hard to understand."

The kitchen also is completely air conditioned, and is fitted out with a super model Frigidaire, electric range, and other electrical appliances.

Minneapolis-Honeywell To Launch 3 Fall Campaigns

MINNEAPOLIS—Beginning in September, the Minneapolis-Honeywell Regulator Co. will open an intensive advertising program to sell controls in three separate markets. Copy for the nation-wide program will have three major themes.

First will be "Leveled Heat," and will present the company's Chronotherm to home owners who have, or expect to buy, automatic heating systems. Second, "Open Windows," will be directed at owners and managers of office buildings, schools, hotels, and apartments, and will show economies possible through use of Modutrol system controls. "Air Conditioning Control," will be the third theme, and will take the form of an educational campaign on the importance of proper control in any air-conditioning system.

The manufacturer states that its campaign will be conducted through "the trade and professional press, newspapers, class magazines, and mass magazines. Magazines to be used include *Collier's, Oil Heat, Domestic Engineering, Fuel Oil Journal, Heating and Ventilating. The Architectural Forum, American Home, Country Life, American Artisan, Architectural Record, Gas Age-Record, Time, Fortune.* Some of the largest metropolitan dailies in the country will carry Minneapolis-Honeywell advertisements during the drive.

Distillata Co. to Sell Frigidaire Equipment

CLEVELAND—New distributor for Frigidaire commercial refrigeration and air-conditioning equipment is the Distillata Co. at 1542 East 24th St. here. The company has handled Frigidaire water coolers for several years, and has the Cuyahoga county territory.

A new showroom has been added to the firm's headquarters, according to J. B. Selover, general manager, who states that each division of the organization will have a separate sales force. L. L. Stevens will direct commercial refrigeration sales, and Robert Lytle will be sales manager of the air-conditioning division.

Air Cooling Helps Gown Shop Sales

CHICAGO—Two 1-ton suspended air conditioners, recently placed in service for Powell, Inc., on Michigan Ave. here, have proved a boon to the establishment's sales operations, C. A. Powell, owner, said last week.

The store is a gown, lingerie, and millinery establishment catering to residents of the exclusive Near North side.

"The system we installed on June 1 proved a boon to our sales operations through the extraordinarily torrid summer through which Chicago has just passed. At all times, the atmosphere in our establishment was comfortable and patrons were able to try on gowns and dresses without the handicap of perspiration.

"During the period when the official temperature readings for the city were 100 to 105 degrees, the temperature outside our shop on Michigan Ave., with sun soaked pavements and the hot exhaust gasses from hundreds of automobiles, was easily 10 degrees higher.

Two Frigidaire suspension models have been so placed that cool, dehumidified air flows constantly into the sales and fitting rooms. Powell's does not sell on the floor, but in small individual sales rooms in which the saleswomen display the dresses to patrons.

"Soilage of new garments in hot weather when patrons are perspiring always is a costly proposition in any woman's wear establishment," Mr. Powell states. "With our cool and dehumidified air, our soilage problem this season has been materially reduced and while it is hardly possible to state the exact sum this one improvement has saved us, it is safe to say that the amount is sizeable."

A 3-ton capacity Frigidaire compressor was installed beneath the circular stairway leading from the street level to the alteration and office quarters in the basement. Two suspension model units were placed above the individual sales rooms in which patrons are interviewed.

The sale and installation were made by the Chicago branch of Frigidaire Corp.

I. C. S. Offers Course In Air Conditioning

SCRANTON, Pa.—International Correspondence Schools have introduced a new home-study course in air conditioning. The course is divided into 12 sections, subjects of which follow:

Air conditioning for human comfort, air-conditioning equipment, design of air-conditioning systems, refrigeration in air conditioning, temperature control in air conditioning, duct and piping design for air conditioning, formulas, geometrical drawing, heating drawing, heat transmission through buildings, mathematics, and physics of air conditioning.

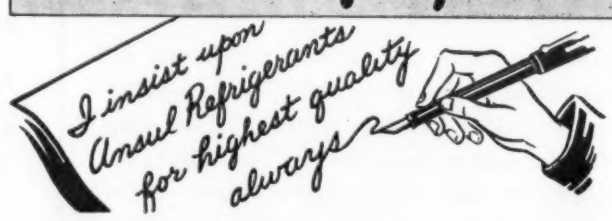
The institution also offers a drawing course in connection with air conditioning to help students who want to learn how to prepare plans for installing air-conditioning equipment. This includes drawings for one and two-pipe steam and hot water heating systems.

80 Guest Rooms Cooled In El Centro Hotel

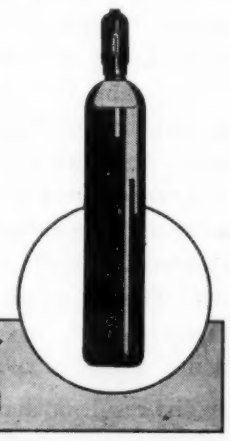
EL CENTRO, Calif.—To cool its 80 guest rooms, lobby, and two dining rooms during six months of the year, the Barbara Worth hotel here has installed a Carrier centrifugal air-conditioning system, refrigeration unit of which also supplies cold water throughout the building. Cost of the installation was $30,000.

A cooling tower is located on the roof of the building to work in conjunction with the system's condenser. As temperatures range between 100 and 130° F. here during the summer, the air conditioner is set for operation at from 80 to 85° F.

"Note to Refrigerant Buyers"



Ansul can make that statement without reservation. Before a cylinder of Ansul SULPHUR DIOXIDE or Ansul METHYL CHLORIDE leaves our plant it is given an individual analysis to make certain that the quality is such that it will render perfect refrigeration service. It's your assurance of absolute satisfaction.



ANSUL CHEMICAL COMPANY
MARINETTE » » » » » WISCONSIN

40 Dealers Inspect Sparton Factory

PITTSBURGH—More than 40 dealers of the Houston-Starr Co., Sparton distributor here, made a four-day trip to Jackson, Mich., recently to tour the Sparks-Withington factories and discuss fall-and-winter selling programs with headquarters executives.

Wallace Russell of the distributorship was in charge of the trip, and Capt. William Sparks, president of Sparks-Withington Co., was host to the retailers. Included in the Pittsburgh delegation were:

J. H. McCormick of McCreery's, Ed Sawdey of Boggs & Buhl, M. A. Donalies, C. C. Stanger, J. H. Phillips, A. W. Brusik, Earl Miller, C. A. Roberts, C. S. Raugh, E. B. Lyons, A. Q. Starr, all of Pittsburgh; Louis Bennett, New Kensington, Pa.; Mark Quinn of Loew & Quinn, Braddock, Pa.; A. W. Britton, Walker's Pharmacy, Oil City, Pa.

Steve Janodis and Frank Lincoff, Weirton, W. Va.; G. W. Mowder and A. G. Chandeler, Martins Ferry, Ohio; A. H. Fedder, Emporium, Pa.; C. F. Milleman, Ambridge, Pa.; C. J. Simeral, Steubenville, Ohio; Ross P. Steetle, Indiana, Pa.; Joe Mondello, Leechburg, Pa.; Frank Lazaran, Uniontown, Pa.; Sam Andalaro, Fairbanks, Pa.; J. E. Kelley, Fairmont, W. Va.; Roy J. Sterck, Brookville, Pa.; J. E. Barns, Connellsville, Pa.

G-E Refrigerators Used In 49 Movies

CLEVELAND—During 1933, more than 75 General Electric refrigerators were shown in 49 motion pictures, according to officials of the manufacturer here, and at least 13 productions so far this season have made use of G-E's. In some of the more recent cinemas, G-E all-electric kitchens have served as the setting for some scenes.

A list of movies in which General Electric refrigerators appeared in 1933, with their respective producing companies, follows:

First National: She Had to Say Yes, The Key Hole, Baby Face, Silk Express, a George Arliss picture, Bread Line, Wild Boys of the Road, Female, Footlight Parade, Kennel Murder Case, Havana Widows, Business Is a Pleasure, Dark Hazard, Headquarters, Bedside, College Coach, Hell's Bells, Ex-Lady, Hi Nellie, Hard to Handle, Mind Reader.

Paramount: Marsh & Colburg, Murder in the Zoo, Bedtime Stories, College Humor, Too Much Harmony, M.G.M.: Follow the Leader, When Ladies Meet, Forgotten Language, Bomb Shell, Meet the Baron, Forever Faithful, Vinegar Tree. Mack Sennett: Sweet Cookie, Uncle Jack, See You Tonight.

R.K.O.: Culbertson, Bed of Roses, Double Harness, Ann Vickers, Butterfly, an Ed Wynne picture. Twentieth Century: Trouble Shooter, Broadway Through a Keyhole. Chesterfield: A Man of the Street, In the Money, Rainbow Over Broadway. Max Cohn: Dark Waters. Fauchen & Rayer: Behind Jury Doors.

Classified as in the listing of '33 productions are those in which G-E's have served as "props" in 1934:

First National: Graduate Nurse, Upper Underworld, Hit Me Again, Man from Frisco, Merry Widows of Reno. Paramount: Good Dame, Here Comes the Groom. R.K.O.: Crime Doctor. Columbia: Get Along Little Hubby. Chesterfield: Just Off Broadway. Reliance: Transatlantic Merry-Go-Round. Rodgers: She Made Her Bed. A Monitor Top was used, also, in the Burns and Allen picture, "Many Happy Returns."

Jones Becomes Partner in Blackett-Sample-Hummert

NEW YORK CITY—Duane Jones, formerly vice president of Maxon, Inc. and several other advertising agencies, on Aug. 15 was appointed executive vice president and partner in the agency of Blackett-Sample-Hummert, Inc. He will head the firm's New York office. In the past he has been associated with accounts such as General Electric, Radio Corp., Heinz, and Colgate-Palmolive-Peet.

Buffalo Norge Dealers Give Food Away

BUFFALO—Norge dealers in this city recently cooperated with the organization of Buffalo Wholesale Grocers in a promotional activity during which prospects were offered 40 free food products with every Norge purchased from a local dealer.

On Aug. 6, Victor's, Norge dealer, used a 14-column spread in the Buffalo *Times* to advertise the offer; and on Aug. 7 and 9 a number of Norge retailers cooperated in use of double-page *Times* advertisements in color to announce the same buying opportunity. Copy headings read, "$115 and up, cash price, 15 cents a day, no down payment, no meter of any kind."

"Let me tell you something as a dealer. Your customers will save the extra cost of good insulation every month, year after year. Dry-Zero saves from 20% to 60% in running costs...from 30 cents a month on a 4 cu. ft. job to a dollar and a half on a 7."

Dry-Zero offers *one* of the best selling points any salesman of a Dry-Zero insulated job can use. It is the chief reason why a low temperature can be maintained in the box with a minimum consumption of current. Dry-Zero assures economical operation for the life of the refrigerator. If you want the complete story of Dry-Zero insulation, write for "What is Dry-Zero."

DRY·ZERO
REG. U.S. PAT. OFF.
THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

Dry·Zero Corporation • CHICAGO Merchandise Mart • TORONTO 687 Broadview Ave.

AIR CONDITIONING

How to Run Tubing For Air Conditioning Told by Servel Men

EVANSVILLE, Ind.—Due to the volume of refrigerant circulated at the high suction pressure encountered, tubing of large cross-sectional area is required on all air-conditioning applications, according to Servel's *Commercial Service Bulletin*. The hard copper tubing designed for use with sweat fittings and commercially referred to as "copper pipe" is best suited for this purpose.

The accompanying table lists the sizes to be used under 'Conditioner Unit Capacity in I.M.E. per Hour," as against the length of tubing run. The main suction line on the model 700-AW (7½-hp. motor) should be no less than 2-in. copper pipe and on the 500-AW (5 hp.) no less than 1½-in. copper pipe. The main liquid line in the case of the former will be ⅞ in. and in the case of the 500-AW, ½ in.

"These sizes should be run from the machine unit to the nearest conditioner. From that conditioner the copper pipe can be reduced in size depending on the number of additional conditioners and the length of run.

"It is essential that the following precautionary measures be exercised in the application of copper pipe and sweat fittings:

"1. That only wrought fittings be used. Cast fittings will not be satisfactory.

"2. That proper solder be used. The proper solder is made up of 95 per cent tin and 5 per cent antimony. It does not contain any lead. The use of such solder will prevent solder disintegration by electrolysis.

"3. That 'Nokorode' solder paste (a resin base flux), obtainable at any local hardware store, should be used. Any flux having an acid base can result in solder disintegration and should by no means be used.

"Local codes allow for the use of standard copper pipe without enclosing it within rigid conduit as its wall thickness and temper is such that it will tend to turn a nail if by chance one is accidentally driven through the wall or floor at the point where it is strapped," the Bulletin continues.

"It is fully realized that in view of the cost of copper pipe there will be an inclination to use smaller sizes than is recommended. We want to caution against this practice for this alone can cause an unsatisfactory installation. Using smaller size copper pipe than is recommended will result in sacrificing machine capacity as undue pressure drops will take place and will result in the necessity of operating the machine unit at lower suction pressure (and capacity) than originally intended.

½-in Liquid Line Solenoid Valve

"Proper application of air-conditioning equipment requires a liquid line solenoid valve either at each conditioning unit or in the main liquid refrigerant line at the machine unit—to cause the conditioning unit to be 'pumped down' at the close of the refrigerating cycle.

"The ⅛-in. orifice solenoid valve assembly is only satisfactory up to a capacity of 100 lbs. I.M.E. per hour. The ½-in. orifice solenoid valve assembly should be used where greater capacities are involved.

Liquid Heat Exchangers

"It is desirable on many air-conditioning installations to use a liquid heat exchanger (drier coil), to prevent condensation on the suction line. Liquid heat exchangers used with Servel air conditioners are of the concentric tube counter-flow type. The suction gas passes through the center tube and the liquid refrigerant flows through the outside tube around the inside tube.

"In this manner the temperature of the suction gas is raised and at the same time the temperature of the liquid entering the conditioner expansion valve is lowered. There is no gain (or loss) in overall efficiency but the use of the liquid heat exchanger does keep the temperature of the suction line up to a point where condensation does not take place and 'sweating' suction lines do not occur.

"A liquid heat exchanger is standard equipment with all of the conditioners with the exception of the ACO-301. A special liquid heat exchanger, part No. S5-200, has been designed for that purpose and can be applied to the ACO-301 conditioners not so equipped, or can be obtained initially on the ACO-301 conditioners if ordered 'with liquid heat exchanger.'

Suction and Liquid Line Shut-Off Valves

"Where the models 500-AW and 700-AW machine units are used there will be sufficient receiver capacity to hold the entire refrigerant charge when all the conditioners are 'pumped down' simultaneously. Therefore, there will not be the need for shut-off valves to facilitate rendering service that exists where, because of limited receiver capacity, conditioners must be pumped down individually. In any event, only large orifice shut-off valves should be used to avoid pressure drop through the valve.

Suction and Liquid Line Sizes for Air Conditioning

Length of Run (Ft.)	50—85 Lbs. I.M.E.	90—110 Lbs. I.M.E.	200—300 Lbs. I.M.E.	
0— 10	½-in. OD Tubing or ½-in. ID Copper Pipe	⅝-in. OD Tubing or ½-in. ID Copper Pipe	¾-in. ID Copper Pipe	Suction Line
0— 10	¼-in. OD Copper Tube	¼-in. OD Tubing	½-in. OD Tubing or ⅝-in. ID Copper Pipe	Liquid Line
10— 25	⅝-in. OD Tubing or ½-in. ID Copper Pipe	⅝-in. OD Tubing or ½-in. ID Copper Pipe	¾-in. ID Copper Pipe	Suction Line
10— 25	¼-in. OD Copper Tube	¼-in. OD Tubing	½- in. OD Tubing or ⅜-in. ID Copper Pipe	Liquid Line
25— 40	⅝-in. ID Copper Pipe	⅝-in. ID Copper Pipe	1 -in. ID Copper Pipe	Suction Line
25— 40	¼-in. OD Copper Tube	⅜-in. OD Tubing	½-in. ID Copper Pipe	Liquid Line
40— 50	⅝-in. ID Copper Pipe	⅝-in. ID Copper Pipe	1 -in. ID Copper Pipe	Suction Line
40— 50	⅜-in. OD Tubing or ⅜-in. ID Copper Pipe	⅜-in. ID Copper Pipe	½-in. ID Copper Pipe	Liquid Line
50— 75	¾-in. ID Copper Pipe	¾-in. ID Copper Pipe	1 -in. ID Copper Pipe	Suction Line
50— 75	⅜-in. OD Tubing or ⅜-in. ID Copper Pipe	⅜-in. ID Copper Pipe	½-in. ID Copper Pipe	Liquid Line
75—100	¾-in. ID Copper Pipe	¾-in. ID Copper Pipe	1¼-in. ID Copper Pipe	Suction Line
75—100	⅜-in. ID Copper Pipe	⅜-in. ID Copper Pipe	½-in. ID Copper Pipe	Liquid Line

Note: "ID (Inside Diameter) Copper Pipe" refers to rigid copper pipe to be used with sweat fittings.

Patrons Turned Away from Air-Cooled Cafe

DALLAS, Tex.—B & B Cafe here, seating 100 persons, has installed a Carrier Weathermaker which has so increased summer custom that some patrons must frequently be turned away, according to the manager. He says that the system costs $60 a month to operate, with the operating day averaging 16 hours.

New York Dress Shop Buys Conditioner

NEW YORK CITY—Ohrbach's, Inc., women's dress shop here which features the slogan, "A business in millions and a profit in pennies," has installed a Carrier air-conditioning system, and is planning a similar installation in its Newark establishment.

3 Frigidaire Coolers Placed in Hospital

DAYTON—The 105° temperature and high relative humidity that was prevalent throughout the country a couple of weeks ago brought a hurry call to the air-conditioning division of Frigidaire from Miami Valley Hospital, Dayton, for three self-contained air-conditioning units for immediate installation in the private rooms of three patients.

Installation men were put to work and the units placed in operation within a few hours, the only mechanical work necessary being the hooking of water lines to the plumbing in the rooms and the making of electrical connections.

The installations were made in the rooms of patients who had been operated upon.

The patients reported that they felt better immediately because of the increased comfort and are obtaining more sleep and rest.

Retail Liquor Store Is Air Cooled

BROOKLYN—Retail liquor store recently opened by Namm's department store here has been equipped with Carrier air conditioning.

Penn Begins Second Series of Meetings

DES MOINES—More than 2,000 dealers, salesmen, service engineers, and manufacturers attended the first series of meetings sponsored by the Penn Electric Switch Co. at which the new Penn Temtrol system of temperature control was introduced and the company's national advertising program was explained.

A second series of meetings has just been announced by Nelson Delavan, sales manager. During the second series, meetings will be held in the following cities on the following dates:

Sept. 10, Hotel Jefferson, St. Louis; Sept. 14, Hotel Bossert, Brooklyn; Sept. 17, Hotel Robert Treat, Newark; Sept. 21, Hotel Broadwood, Philadelphia; Sept. 25, Hotel Yorktowne, York, Pa.; Sept. 28, Hotel Bethlehem, Bethlehem, Pa.

Oct. 1, Hotel Providence-Biltmore, Providence, R. I.; Oct. 3, Hotel Kimball, Springfield, Mass.; Oct. 5, Hotel Bancroft, Worcester, Mass.; Oct. 8, Hotel Rice-Varick, Manchester, N. H.; Oct. 10, Hotel Kenmore, Boston; Oct. 15, Hotel Vermont, Burlington, Vt.; Oct. 17, Hotel Syracuse, Syracuse, N. Y.; Oct. 19, Hotel William Penn, Pittsburgh; Oct. 22, Hotel Ten Eyck, Albany, N. Y.; Oct. 24, Hotel Arlington, Binghamton, N. Y.; Oct. 26, Hotel Statler, Buffalo.

Nov. 5, Hotel Netherland Plaza, Cincinnati; Nov. 7, Hotel Claypool, Indianapolis; Nov. 9, Hotel Keenan, Fort Wayne, Ind.; Nov. 13, The Neil House, Columbus, Ohio; Nov. 14, Hotel Commodore Perry, Toledo; Nov. 16, Hotel Pantlind, Grand Rapids, Mich.; Nov. 19, Hotel Stevens, Chicago; Nov. 21, Hotel Loraine, Madison, Wis.; Nov. 23, Hotel Blackhawk, Davenport, Iowa; and Nov. 26, Hotel Pere Marquette, Peoria, Ill.

Several manufacturers are sponsoring dealer gatherings of their own immediately following the Temtrol program which begins at 10:30 o'clock and is adjourned at 3:30. Dealers attending the meetings are guests of the Penn Electric Switch Co. for a special noon-day banquet.

Elite Dressmaker Buys Carrier System

NEW YORK CITY—Hattie Carnegie, dressmaking establishment catering to the elite, has just installed a Carrier air-conditioning system.

again — A NEW Standard of VALUE

TYPE KR 1935

RANCO THERMOSTAT

WITH STAINLESS STEEL SHELL

- Eliminates breaking of covers and bases . . . All parts corrosion-proof . . . Simplified construction . . . Permanent accuracy of operation . . . Most dependable trip-free overload ever built . . . Available for chest style as well as the de luxe models with all automatic features.

NRA MEMBER U.S. WE DO OUR PART

THE AUTOMATIC RECLOSING CIRCUIT BREAKER COMPANY

1300-10 INDIANOLA AVENUE — COLUMBUS, OHIO

TVA Pays Alabama 5% on Earnings

MONTGOMERY, Ala.—In a conference held recently between Alabama's Governor B. M. Miller and David E. Lilienthal, a director and counsel for the Tennessee Valley Authority, a pledge of cooperation was made between the state of Alabama and the TVA.

The governor stated that Alabama desires no taxes from the Authority other than the 5 per cent on its gross earnings in Alabama, provided in the congressional act covering TVA operations. The state treasury recently received $40,000 as the first fiscal year's payment of this 5 per cent tax.

Counties and cities in Alabama's TVA territory will not be asked to take a loss in revenue as a result of the Authority's having purchased some private utility properties, said Mr. Lilienthal, and added that a plan is being made for reimbursing them.

Gov. Miller's comment on the conference was, "Mr. Lilienthal . . . assured me that it is the desire of the TVA to cooperate in every possible way with the state of Alabama. I expressed the appreciation of the citizens of Alabama and myself, as governor, of the great work that is being done in this state by the TVA and of the fine spirit that has been shown by the Authority and its employees."

During his visit here, the TVA official conferred with J. Haden Alldredge, chief of the transportation division of the Alabama Public Service Commission, concerning plans for transportation developments.

Mr. Lilienthal predicted that the Tennessee River will eventually be developed into one of the important waterways of the southeast. For the past nine months, the TVA has been making a survey relative to development of transportation facilities and a coordination of water and rail lines.

In the survey, he said, the Authority had given some attention to the "Pittsburgh Plus" method of pricing steel made in the south. "We find that it has a very crucial effect on the Birmingham steel industry, a fact we cannot ignore.

TVA will present its findings before the Federal Trade Commission, he asserted, but will not attempt to intercede in behalf of southern manufacturers. He said the presentations would be made for "a sort of family conference."

During his short stay here, Mr. Lilienthal released some figures indicating what progress the Authority is making in Athens, Ala., with its sale of current. He showed several bills taken from the Athens office.

Since the city began using TVA power, consumption has increased 50 per cent and consumers' bills have shown substantial drops, he stated. One bill showed a domestic account of $10.35 for 177 kwh. in May, before the city began use of TVA power, and $4.32 for 101 kwh. in June, after TVA power was introduced.

A commercial account showed charges for $19.08 for 232 kwh. before TVA power came in, and on the new power the following month paid $7.24 for 584 kwh.

MacCarthy, Kelvinator District Head, Dies

RALEIGH, N. C.—J. K. MacCarthy, since 1928 a district manager for Kelvinator Corp., died suddenly at his home here Aug. 14. Mr. MacCarthy was 37 years old.

He had been continuously associated with the sales of electrical products for the past 21 years, having entered the electrical industry with his own appliance shop at the age of 16.

In 1926, after having served as a Kelvinator distributor and a farm lighting equipment salesman, Mr. MacCarthy was selected by Kelvinator to fill a field representative vacancy with a district office in Raleigh. Two years later he was made a district manager, covering Raleigh and Greenville, N. C., and Columbia and Charleston, S. C. Last year Norfolk and Richmond, Va., were added to his territory.

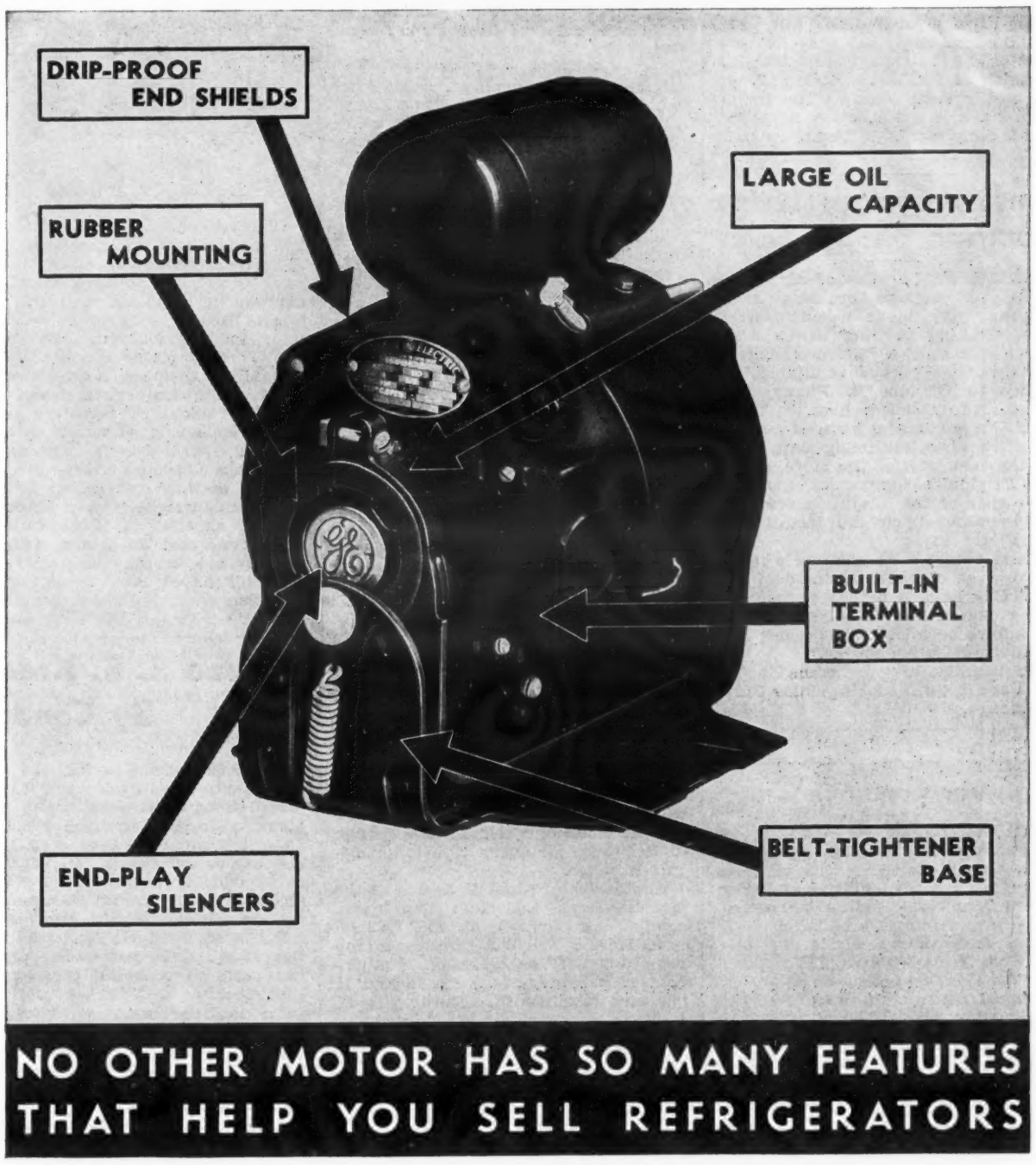
Chile Asking for Bids On Warehouse

SANTIAGO, Chile—A refrigerated warehouse to cost about 4,000,000 pesos ($160,000) is to be built soon in the Chilean naval base at Talcahuano, Chile, according to American Consul Franklin B. Atwood here. It will be used for preservation of fruits, meat, fish, and agricultural produce awaiting shipment, and will be so equipped that in case of national emergency, it can be converted for use by the navy.

Specifications will probably be ready for bids in September, and will call for a warehouse, insulation, and machinery. Only insulating materials and refrigeration equipment will be imported for the structure, according to Mr. Atwood.

Add Another BIG SALES FEATURE to Your 1935 Unit

the G-E "Care-Free" Capacitor Motor



NO OTHER MOTOR HAS SO MANY FEATURES THAT HELP YOU SELL REFRIGERATORS

RUBBER MOUNTING . . . The 1935 "care-free" motor gives you smooth, cushioned power, with new quietness. It runs in a mounting of springy, live rubber (treated with a compound which makes it impervious to oil). It combines excellent sound-isolating qualities with good shaft alignment and excellent flexibility. It is designed to eliminate objectionable noise caused by torque vibration and by endwise and radial out-of-balance.

END-PLAY SILENCER . . . Consisting of a durable spring-steel diaphragm built in as an integral part of each end shield, this device eliminates end-play noise by cushioning oscillations of the rotor in either direction longitudinal to the shaft — another reason why the "care-free" motor is quieter.

BELT TIGHTENER . . . This radically different belt tightener depends on torque, and not on springs, for its action. It maintains just sufficient tension to prevent slippage, automatically varying the tension to meet changes in load. The result: greatly reduced friction, which means (1) longer life of belts, bearings, and seals; (2) quieter operation; and (3) lower operating costs. Standard base is available for direct-drive compressors.

CAST-ALUMINUM ROTOR . . . The squirrel-cage rotor winding is a one-piece, solid aluminum casting, formed by a unique high-pressure method. This assures a uniform, well-balanced rotor with permanent electrical characteristics.

LARGE OIL CAPACITY . . . Large, wool-packed bearings, with oil throwers and returns which conserve the lubricant and assure a constant supply of fresh, clean oil. Lubrication is required only once a year.

BUILT-IN TERMINAL BOX . . . Lowers assembly costs by eliminating all necessity for splicing and soldering leads. Four binding posts are provided for direct connection of the line and cold-control leads.

DRIP-PROOF END SHIELDS . . . These protect the motor from falling dirt or water and give the "care-free" motor a modern, streamline appearance.

G-E Type KC capacitor motor with standard base for direct-drive compressors

Don't fail to see the (CARE-FREE) CAPACITOR-MOTOR before you buy. Everything about it spells lower service costs and greater customer satisfaction.

Also, to assure unit responsibility for the electric equipment on your refrigerator, order G-E cold-control units, and cable, with the motor. For complete information, address General Electric, Dept. 6A-201, Schenectady, N. Y.

070-61

GENERAL ELECTRIC

AIR CONDITIONING

Jewelry Firm Buys Year-Round System

CINCINNATI—To perform all functions of year-'round air conditioning, a system is being installed in Mayor's Jewelry Co. here by Harten-Knodel Distributing Co., local Carrier distributor. All optical, bookkeeping and work rooms will be conditioned.

Located in the basement, the 15-ton Carrier compressor, using Freon, will be operated in conjunction with a Carrier Weathermaker having two Aerofin coils. Conditioned air will be distributed through concealed ducts installed in walls of the store. Carrier Blue Ribbon air distributing outlets are to be employed. A temperature of 80° F. will be maintained, with a relative humidity of 50 per cent.

Total volume of space to be conditioned is 34,500 cu. ft., according to Harten-Knodel engineers, who say that the system, which is of the direct expansion type, is designed for admission of fresh air totaling 25 per cent of the total volume. The conditioned space is not specially insulated for air conditioning. Penn controls are to be used.

Comfort Cooling Helps Suburban Shop's Sales

OAK PARK, Ill.—Use of air conditioning to promote business in a suburban town by a women's wear shop operating in competition with large stores only a half-hour distant (Chicago), has proved profitable, according to Claudia B. Pierce, proprietress of Claudia's here.

Mrs. Pierce has a 3-ton store-type Frigidaire air-conditioning unit, built into the rear wall of the store, and a 3-ton Frigidaire compressor, installed in the rear of the alteration rooms.

Commenting upon the installation, Mrs. Pierce says:

"Our summer sales are much better this year as a result of our cool dry shop. Our help is not so fagged out at the end of the day, and no garments have been lost for sale purposes due to perspiration marks."

The installation was made by the Oak Park branch of Frigidaire Corp. of Chicago.

Kansas City Auditorium Is Air Conditioned

KANSAS CITY, Mo.—The U. S. Engineering Co., special agent for Auditorium systems in this city, reports an air-conditioning installation in New Municipal Auditorium here.

The architects were Alonzo H. Gentry & Voskamp & Neville, Inc., also Hoit, Price & Barnes. W. L. Cassell was the engineer.

General contractors were S. Patti Construction Co., Fleisher Engineering & Construction Co., and Ring Construction Co.

Auditorium air-conditioning systems are to be utilized in both the Municipal auditorium and theater.

45 Cleveland Business Places Have Bought Air Conditioning

CLEVELAND — Some 45 stores, offices, restaurants, clubs, and beauty shops in this city are now equipped with air conditioning, more than half of these installations having been made this year, according to a report of Electrical League of Cleveland.

One of the most recent Cleveland installations is in the retail store of the Cole Shoe Co., 410 Euclid Ave., where a 6-ton Carrier Weathermaker provides comfort cooling. Approximately 2,600 c.f.m. of air are introduced into the store from vents across the ceiling near the middle of the room, and from vents behind the cases. The system provides sufficient conditioned air for 65 people. Approximately 560 c.f.m. of fresh air are used.

Benefits Employees

A. Shemberger, manager, says of the equipment: "Hardly a customer comes into our store without commenting that it is a pleasure to shop here. And I know our employees are happier, better workers. They no longer reach the end of the day with that 'all in' feeling."

A few doors away, the Allen Shoe Store has installed two Thermo-Products air-conditioning units of the suspended type. Largest installation to date in a social club is in the Germania Turnverein Vorwaerts at 1622 East 55th St.

The club has three York separately operated units which supply a total of 58 tons of refrigeration. One cools the main club room and barroom, one the auditorium, and one the rathskellar.

Unit in the club room and barroom provides for an occupancy of 250 persons and furnishes 3,600 c.f.m. or eight and one-half changes per hour. Four complete changes of outside air are provided by introducing 2,000 c.f.m. into the system. The compressor has a 15-ton capacity.

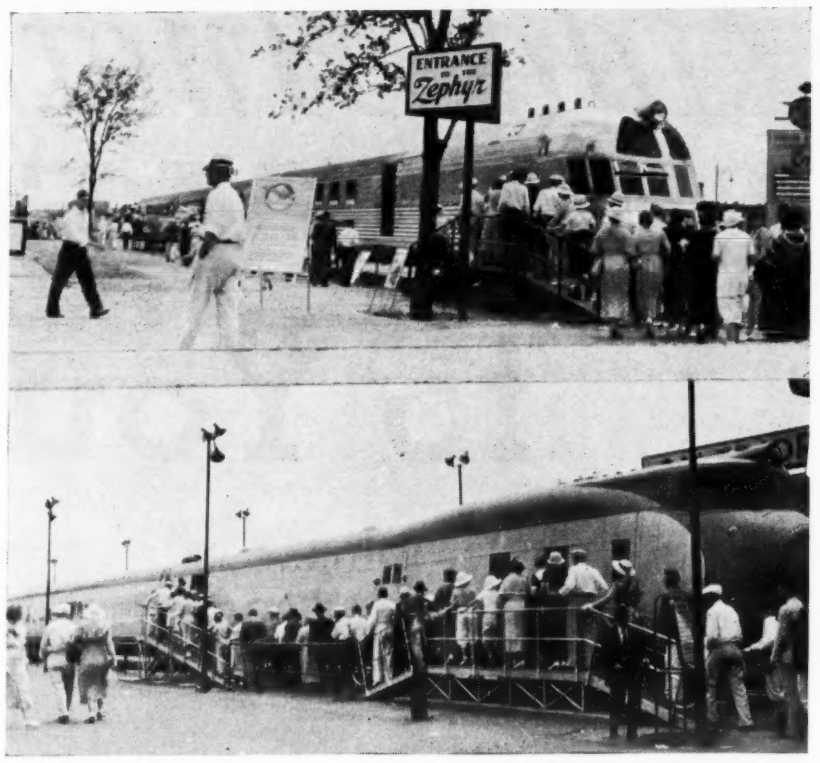
Rathskeller Is Cooled

For the rathskeller there is a 10-ton unit which delivers 3,000 c.f.m. and changes the room air 15 times per hour with five complete outside-air changes. The room accommodates 200 people. In the auditorium, which seats 600, cooling is done by a 33-ton unit. This system delivers 9,000 c.f.m. with four complete changes of outside air per hour and a complete change of the room air every eight and one-half minutes.

Another recent installation is at the McNally-Doyle Co. store (tea room, candy, and pastry) at 1252 Euclid Ave. Here a Frigidaire system giving 11½ tons of refrigeration has increased patronage between 15 and 18 per cent in a month, according to H. Harter, manager.

The Frigidaire system provides 6,000 c.f.m. and changes the air 12 times an hour, bringing in 1,300 c.f.m. of fresh air. It will accommodate 142 persons under maximum conditions.

Air-Conditioned Trains Still Popular



CHICAGO—Air conditioning and the modernistic design which feature the new streamlined trains at A Century of Progress have made their exhibits a popular spot this year. Shown above are crowds waiting in line to inspect the Burlington's Zephyr (top picture) and the Union Pacific's high-speed train (lower picture). Both trains are designed for speeds of about 110 miles per hour.

The Zephyr is driven by a 600-hp. Winton Deisel-electric power plant. The train consists of three car bodies carried on four trucks. It is 196 ft. long. and weighs about 195,000 lbs. Seating capacity is 72 passengers in the second and third cars, and space is provided in the first and second cars for 50,000 lbs. of baggage and express.

The Zephyr was built by the Budd Mfg. Co., and uses York air-conditioning equipment. Freon refrigerant, Uniflo grilles, Alfol body insulation, Celotex for duct insulation, and Penn controls are also employed.

The Union Pacific train was built by Pullman, with Pullman's air-conditioning system (using Lipman compressors). Like the Zephyr its structure is largely of aluminum alloys, and weighs about 170,000 lbs. Its power plant is a 600-hp. Winton Deisel, 12-cylinder, distillate-burning engine.

The Freon compressor for the air-conditioning system is driven by a 12-hp. Allis-Chalmers motor. The train is insulated with 2 in. of Rokflos. Other equipment includes Penn controls, Detroit Lubricator expansion valves, and Chase Brass pipe and fittings.

Three S. S. Kresge Stores Are Equipped By Conditioned Air Corp.

DETROIT—Conditioned Air Corp. of this city has just completed several installations of air-conditioning equipment in stores of the S. S. Kresge Co. Two of these are in Washington, D. C., another is in Peoria, Ill., according to David Newton, air-conditioning engineer of the Conditioned Air Corp.

First of the Washington installations is on J St. N. W., and employs five 15-hp. Universal Cooler condensing units to cool the basement and first floor.

To cool the basement, two of the 15-hp. machines are used. One of these is connected to a 12½-ton Trane air-conditioning unit, while the other serves two 7½-ton Trane coils built up in an assembly with the fan and eliminator plates.

15-hp. Compressors

Cooling the first floor are three 15-hp. Universal Cooler machines serving Trane coils of 37½-ton total capacity, all installed on the second floor. A blower in this set-up furnishes 15,000 c.f.m. of air which is delivered through a large circular diffuser outlet in the center of the ceiling, directly below the blower on the second floor. Approximately 25 per cent of outside air is introduced in this system.

A problem of water supply was encountered in connection with this installation. Washington's water supply has a temperature of 87° or higher during the hot summer months, moreover it reaches this Kresge store at a pressure of only about 30 lbs. per sq. in.

It was found that when the refrigerating machines were in operation, their condensers required so much water that the upper floors of the building (it has six stories) did not have sufficient water. The problem was solved by installing a 2-hp. booster pump to increase the buildings water pressure from 30 to 60 lbs.

Basement Conditioned

The second Kresge store in Washington was equipped with six 15-hp. Universal Cooler condensing units to furnish refrigeration for air conditioning of the basement and first floor of the store.

Two of the machines serve to cool the basement, one being connected to two 7½-ton Trane units, the other to built-in apparatus of Trane coils, Clarage fans, etc.

The other four machines operate with a trunk-line duct system to condition the first floor. Ducts are installed in the ceiling between first and second floors, being served from a duct system originating upstairs in the second floor. Since it is a two-story building, all ducts near the warm ceiling of the second floor were insulated with a 1-in. covering of hair-type insulation.

Air is distributed to the first floor space by four centrifugal diffuser outlets constructed with Uniflo cores. Approximately three tons of cooling effect is utilized to condition offices on the second floor of the building.

A third Kresge installation is in the Peoria (Ill.) store where three 15-hp. Universal Cooler machines, installed in the basement, provide refrigeration for direct expansion Trane coils placed in a newly installed ventilating system.

Buenos Aires Apartment House to Be Cooled

NEW YORK CITY—Equipment for completely air conditioning an apartment house in Buenos Aires has been ordered from Carrier Engineering Corp. The transaction is being handled by Carrier-Lix Klett, subsidiary of Carrier-Brunswick International, Inc.

Utility in Hartford Modernizes System

HARTFORD, Conn.—Equipped in 1914 with a 20,000-c.f.m. Carrier air conditioner and a 54-in. Sturtevant multivane fan, plus a spray washer, for cleaning and circulating air, the Pearl St. office building of the Hartford Electric Light Co. this season has installed Frick units to supply comfort cooling on three of its floors. Automatic Refrigerating Co. here supplied the apparatus and made the installation.

The system combines use of deep well and electric refrigeration. A 600-ft. well on the property, long out of use, has been called back into service to supply cold water. An air lift raises the well water into a cistern located in the floor of the Pearl St. sub-station, giving a constant supply of 55 gals. per minute at 60° F.

Gives 18 Tons of Cooling

The cold water is pumped through a fin coil of 3,600 sq. ft. located in the air stream of the Carrier conditioner. There the water temperature is raised about 8°, giving the equivalent of approximately 18 tons of refrigeration.

This is the primary cooling stage, and at incoming air temperature of 80° F. or higher, the entire air stream is cooled about 9° by this method. From this point the well water goes to a refrigerator condenser, liquefying the refrigerant and finally wasting to the sewer at about 90° F.

Final stage of cooling and dehumidification is effected by two 35-ton Frick compressors, using Freon. The converter for this system is located directly in the air stream of the conditioner, and consists of approximately 4,000 sq. ft. of fin coil made up of four sections. Each section is controlled by its own expansion valves and a liquid solenoid valve which in turn is controlled by a thermostat in the display room of the first floor.

Operation of Compressors

Each compressor is operated by a 20- to 40-hp. two-speed motor. The cold water pump and the two speeds on each compressor constitute five steps of cooling. These steps are controlled by thermostat settings, as follows: 74° for water pump, 75° for No. 1 compressor at slow speed, 76½° for No. 2 compressor at slow speed, 78° for No. 1 compressor at high speed, 80° for No. 2 compressor at high speed.

The last four thermostats actually control the four solenoid valves on the liquid lines which when opened supply the expansion valves, creating a pressure in the converter and operating the respective pressure switches on the control panel which in turn close the circuits to the motor starters. A shredded glass filter has been installed at the point of air supply to the conditioner to remove dust.

Conditioned air leaves the fan at 62°-68° F., which is usually 6 to 8° below average dew point. Consequently, much moisture is removed from the air before it is delivered to the building, where it mixes—through high velocity grilles in the larger offices—with the existing air, giving a cool, dry atmosphere approximately 10° below outside temperature.

On a recent day when the dry bulb temperature was 91° F. with 74 per cent relative humidity, approximately 36 grams of water were taken from each pound of air per minute, which amounted to 7.5 lbs. of water per minute—60 gals. per hour.

Fox Name Plates & Escutcheons

Fox name plates are beautifully modeled in metal and inlaid with rich lacquers and enamels.

A Fox Nameplate, with its lustrous and alluring appearance, is the finishing touch for any product.

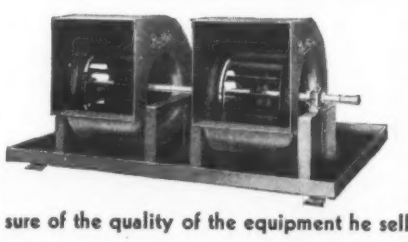
Our art department will be glad to offer suggestions.

FOX COMPANY

Manufacturers of Artistic Metal Products Since 1862

FOX BUILDING, CINCINNATI, O.

Accessories *for the* Air Conditioning Contractor

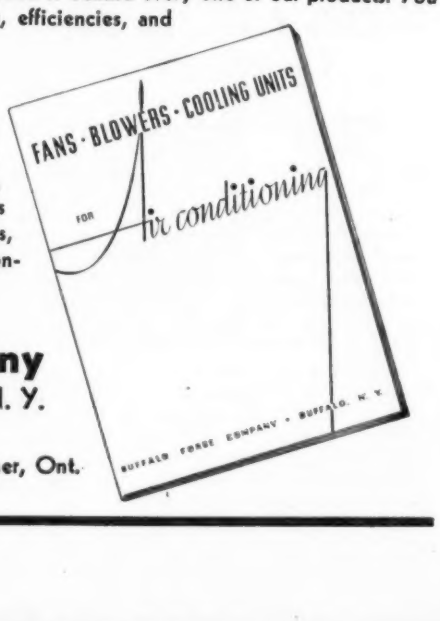


Air conditioning is becoming increasingly easy to sell—for the contractor who can deliver guaranteed results. In order to do this—he must be sure of the quality of the equipment he sells.

That's why hundreds of contractors are buying Buffalo fans, unit coolers and other accessories—because the 56-year-old Buffalo reputation is behind every one of our products. You can place absolute faith in Buffalo ratings, efficiencies, and physical construction.

WRITE for this Booklet.

Covering the complete Buffalo line of large and small fans, disk and centrifugal types; unit coolers, comfort conditioners, etc., this booklet gives full information on capacities, dimensions, etc. Helps you to sell Air Conditioning. Send for your copy to-day.



Buffalo Forge Company

487 Broadway Buffalo, N. Y.

In Canada:
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

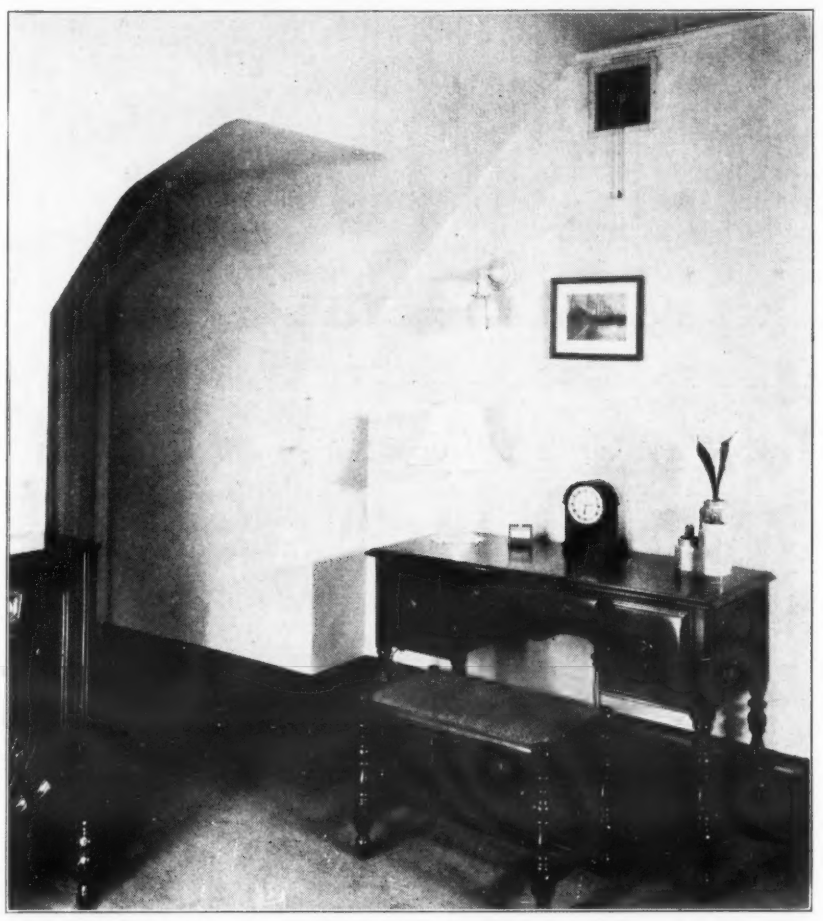
ALL-YEAR 'ROUND AIR CONDITIONING FOR THE HOME OF ELECTRIC REFRIGERATION NEWS

* * *

Publisher Designs System and Is Surprised to Find that It Works

(Concluded from Page 1, Column 2)

operation during the extremely hot weather which pervaded Detroit this summer, no one was more surprised than Mr. Cockrell to find that the system actually delivered clean, cool, fresh air to every room in the house and that all of the equipment worked so quietly and effectively that few if any changes will be necessary. Equipment for winter humidification and steam coils for tempering the fresh air at the intake, also automatic control devices, not yet installed, will be described later.

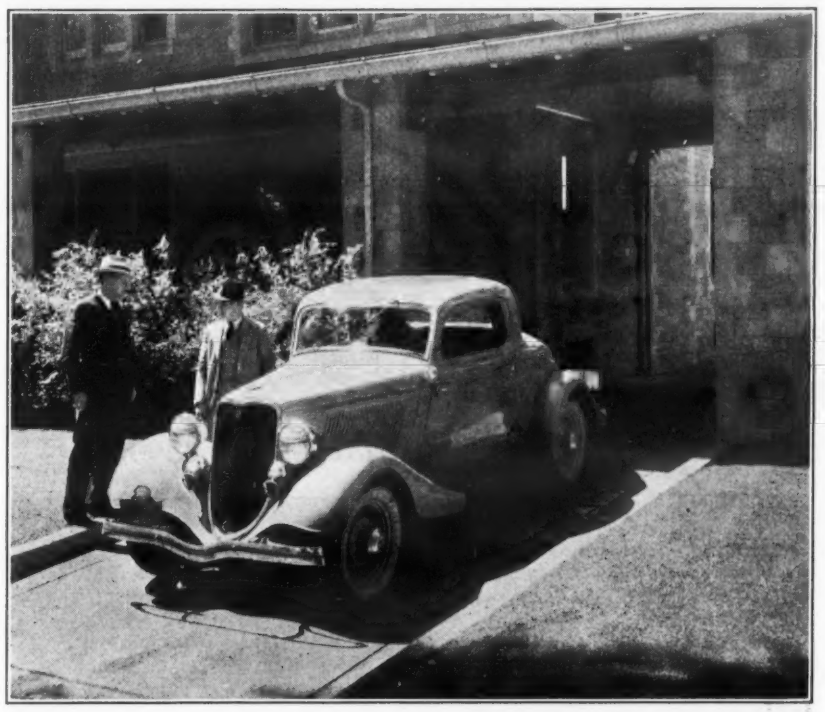


Above is a corner of the apartment which was fitted up on the third floor for Mr. and Mrs. John R. Adams. Mr. Adams is production manager and Mrs. Adams runs the subscription department of the NEWS. Their marriage last fall was the first inter-office romance of the organization. It happened just about the time the remodeling of the NEWS building was under consideration and the newlyweds promptly accepted an invitation from Mr. Cockrell to make the apartment their home and take over the management of the premises. Note the fresh air grille near the ceiling.

An excellent location on one of Detroit's main thoroughfares, facing the Public Library plaza, large rooms, numerous wide windows, and a large ground area (150 ft. frontage by 145 ft. depth) all went to make this an ideal location for the NEWS home. The residence was easily adapted to office purposes and there is ample ground area for an addition to house the printing plant and other mechanical equipment.

The first step in air conditioning the building consisted of insulating the entire ceiling line of the top floor. While the 20-year-old building was unusually well constructed (stone walls, slate roof, etc.) it lacked adequate protection against heat transfer through the roof. The next step was to have tight-fitting storm windows made. There were over 50 large windows in the main building. Since the walls were from 12 to 18 inches thick, with an air space between the plaster and the brick lining, it did not seem necessary to worry about heat loss through the walls.

At first we thought that the wide spreading eaves and tall shade trees would make awnings unnecessary except on the west (rear) of the house. Later we tried a partial installation and found that it made a big difference in the heat absorption.



Since the staff members of the NEWS are inveterate travellers, it is a great convenience to have our own private parking space. Above are Roy Sharp, accountant, and A. J. Cutting, statistician, the latter with his new Ford sport coupe finished in battleship gray.

Jean H. Adams, who signs many letters to subscribers, is shown in a domestic pose. Her apartment kitchenette contains a Norge refrigerator and an Electromaster range. The ceiling and walls of the third floor are completely insulated with four inches of Johns-Manville Rock Wool, and the rooms are air conditioned. A separate blower in the basement circulates air to the apartment since the "usage factor" does not coincide with that of the office floors below. Thus comfort is attained in third floor rooms which would otherwise be cold in the winter and hot in the summer.

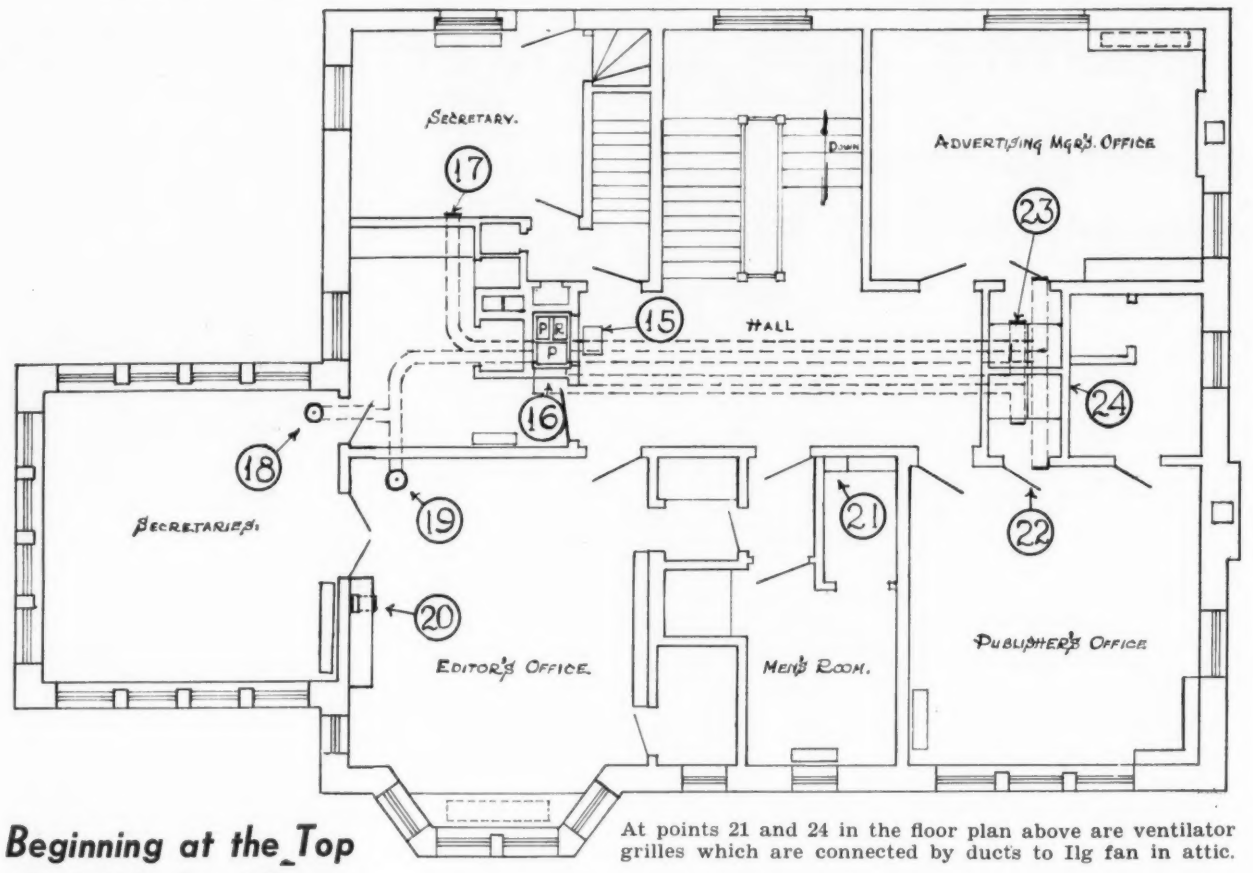
A two-story garage, 36 ft. square, gave 2,500 sq. ft. of useful working space. Five rooms on the second floor are being used for editors' offices, and the ground floor is now temporarily used for a mailing and shipping room.

In the picture is Andrew Gantt, who came up from Alabama last fall to try his luck in the North. Andy didn't know that jobs were scarce in Detroit so he started looking for one just as if he expected to get it. He landed as handy man with the NEWS. Andy adopted the large lawn and takes great pride in keeping it in attractive condition.

Closet Space Is Appropriated For Circulating Air Ducts

The Westinghouse electric water cooler shown above is in the second floor hall and is indicated by No. 15 in the floor plan on this page. Back of the water cooler there was originally a big linen closet located directly above a larger closet on the first floor. This space is now entirely filled with air ducts—a pressure and return to serve the third floor and a pressure duct which goes to the attic, across several joists and down again into ceiling aspirators indicated in the diagram at points 18 and 19. This pressure duct also has a branch running to the secretary's room at point 17. A return going down through the closet is at point 16.

Second Floor Plan Showing Air Distribution from Central System



At points 21 and 24 in the floor plan above are ventilator grilles which are connected by ducts to Ilg fan in attic.

Beginning at the Top And Working Down

Contrary to the usual practice in planning an air-conditioning system, Mr. Cockrell began at the roof and worked down to the basement. Hence we began, on the preceding page, by describing some features of the third floor. On this page is shown a diagram and pictures of a few points of interest on the second floor.

The most difficult problem in connection with the installation of air ducts was that of finding a way to reach the two rooms at the right-hand side of the diagram (offices of the publisher and advertising manager). This problem was solved by taking up a section of the floor across the hall. Four ducts were laid between the joists from the closet at point 15 to the two closets shown at points 22 and 23.

It should be noted that all of the exterior walls are solid stone and brick and it was found that the two bearing walls running through the middle of the house, on each side of the main hall, could not be used for air ducts because of heavy steel I-beams used in their construction.

The picture at the right, taken in the advertising manager's office, shows a five-way Uni-Flo register (No. H-301, series E, size 12x12 inches) near the ceiling. In the closet near the floor is a return air grille indicated at point 23 in the floor plan.

At point 22 in the publisher's office is a similar arrangement of ducts and grilles. In order to conceal the ductwork, compartments were built in each closet with a set of inner doors. Also note that a panel of the door has been removed and a large grille core inserted to allow the return air to flow through a portion of the closet.

Five-Way Grille Diffuses Air in All Directions

The five-way grille diffuses the air at various angles. See center column for further details. Hazel Hall adorns the picture.

Ceiling Aspirator Distributes Air Evenly

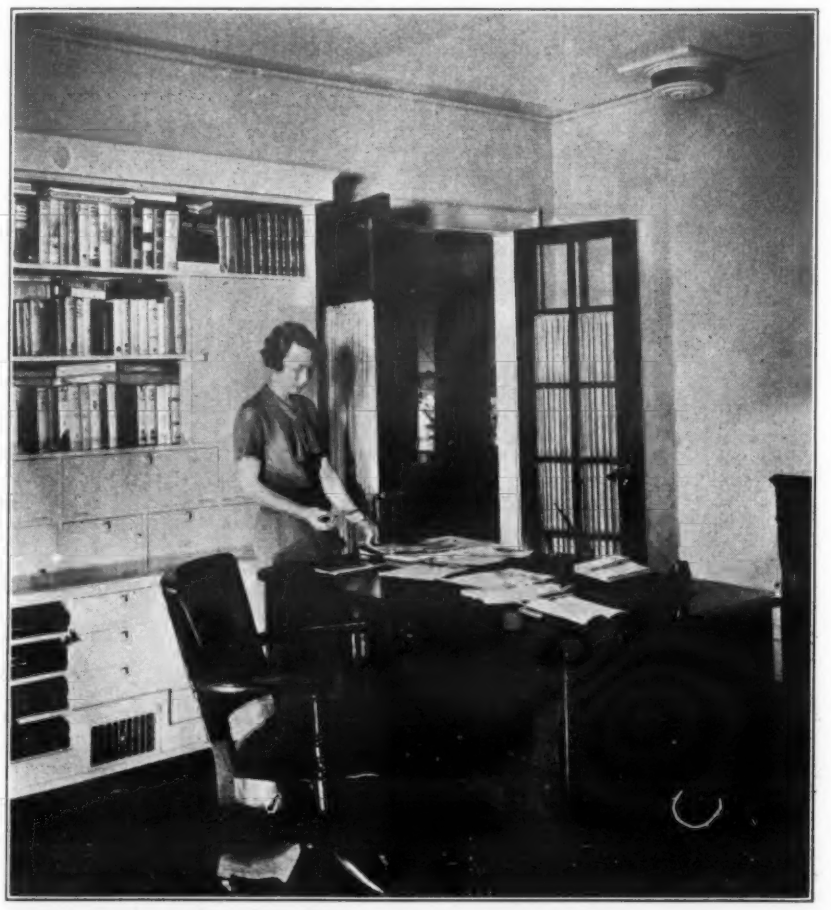
Above is shown a ceiling aspirator made by the Uni-Flo Grille Corp. of Detroit, indicated at point 18 in the floor plan. Looking through the doorway you will also note a small, three-way Uni-Flo grille above a closet door. In the lower right-hand corner of the picture, scarcely distinguishable in the picture, is a return air grille just above the baseboard of the passage way. It is shown at point 16 in the floor plan.

In order to reach point 17 it was necessary to run a duct across the ceiling of the utility room. It is the only exposed duct above the basement.

Helen Gilmore, assistant to the advertising manager, is a lot better looking than she appears in this picture.

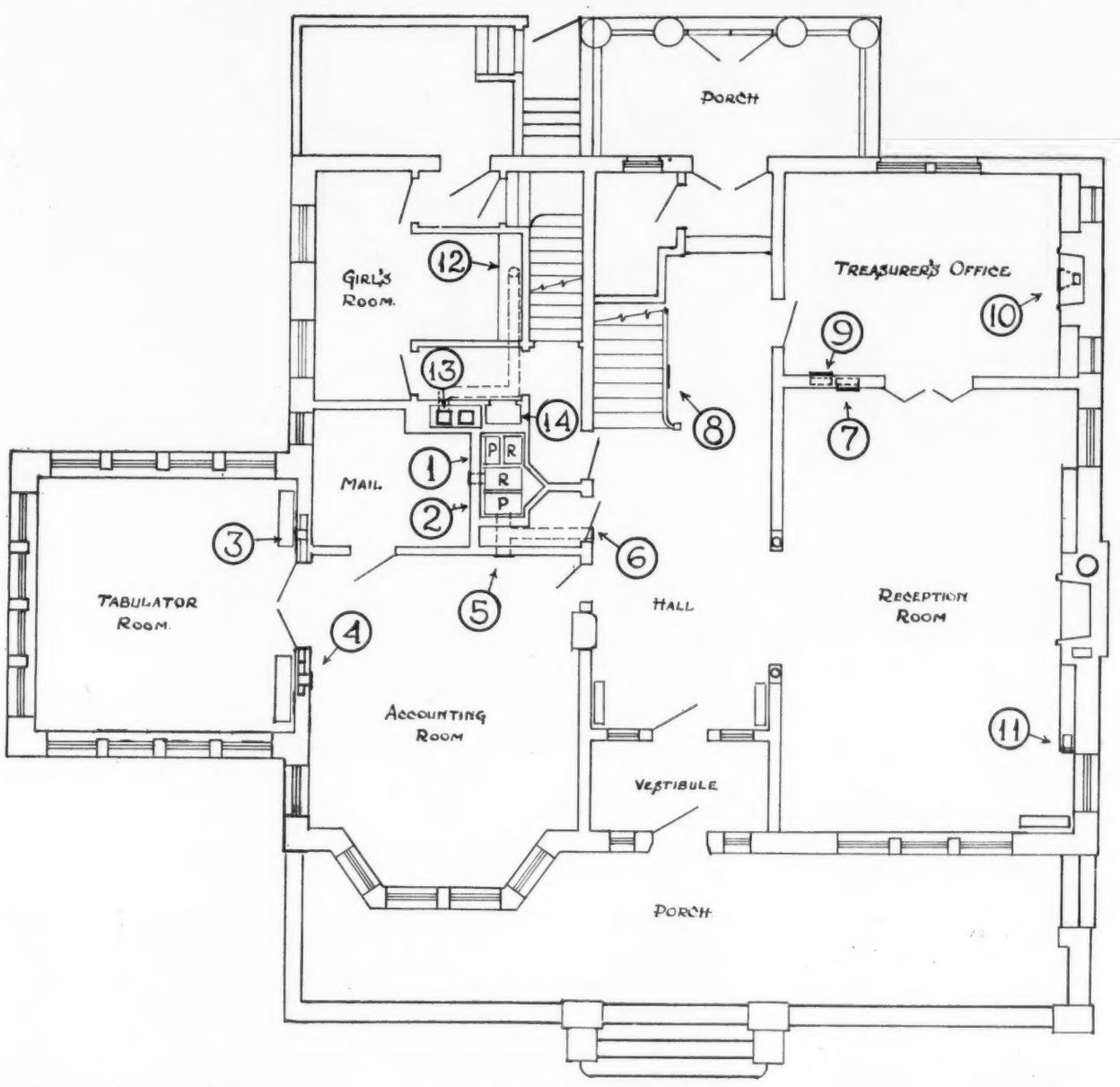
100% Fresh Air

When weather conditions are favorable 100 per cent fresh air will be used and all return air will be exhausted by an Ilg blower connected to the above pipe in the basement.



Above is a corner of the editor's office showing the ceiling aspirator at point 19 and the return air register at point 20 in the base of the built-in cabinet and bookcase. Miss Betty Knight, editor's secretary, was called in to provide the human interest.

First Floor Plan of Residence Which Was Converted into Offices



An Unused Fireplace Is Made To Serve Two Useful Purposes

We ran into difficulties trying to find a suitable place to install air ducts in the reception room and George Congdon's office (see plan). Pressure lines were inserted in a partition at points 7 and 9. It was found that other parts of this wall were filled with steam and water pipes and electric wiring. The outside walls could not be used because of their brick and stone construction. As has been previously explained, the partition between these rooms and the hall was blocked off by I-beams at the floor line.

In order to get a return duct from the treasurer's office, we adopted the expedient of running it through the ash pit in the fireplace at point 10 and then across the ceiling of the basement. Reinforced concrete was laid over the metal duct and the treasurer's strong box was fitted into the fireplace opening, thus using this space to double advantage.

In these days of oil burners and automatic heat control, fire places are more ornamental than useful and other prospects for air conditioning may not object to a sacrifice of this kind. Even the flue might be used for a riser from basement to second floor.

An Ilg exhaust blower in the basement storage vault is shown at the right.

Sliding Doors Removed

Felicia Eaton at the high-speed tabulating machine gets fresh air from the grille in the wall above. Three walls of this room are all windows. See point 3 in the plan.

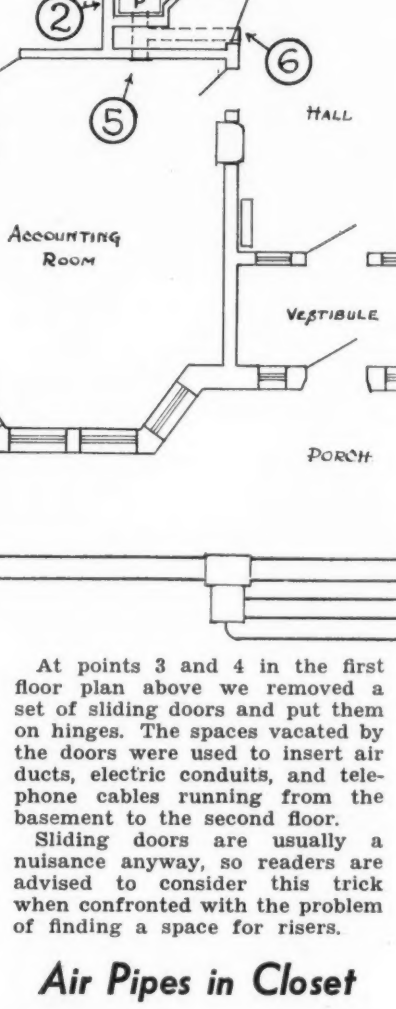
Make Way for Ducts

Back of the automatic card sorter, operated by Marion Gallagher, is a return grille in the panelled wall. See point 4 in plan.

At points 3 and 4 in the first floor plan above we removed a set of sliding doors and put them on hinges. The spaces vacated by the doors were used to insert air ducts, electric conduits, and telephone cables running from the basement to the second floor.

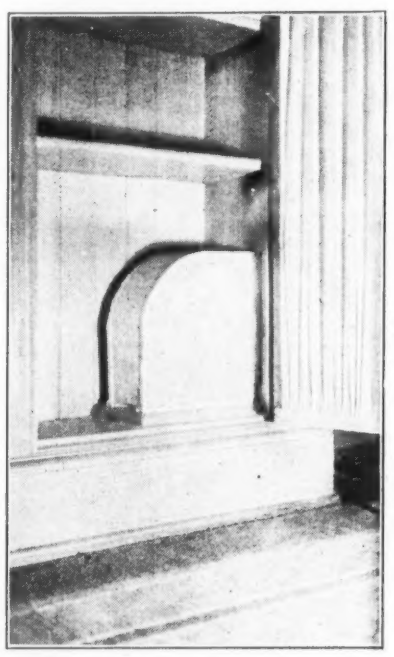
Sliding doors are usually a nuisance anyway, so readers are advised to consider this trick when confronted with the problem of finding a space for risers.

Air Pipes in Closet



The fresh air outlet above is supplied by a short duct from the main riser in the closet as shown at point 5 in the diagram.

Bookcase Grille



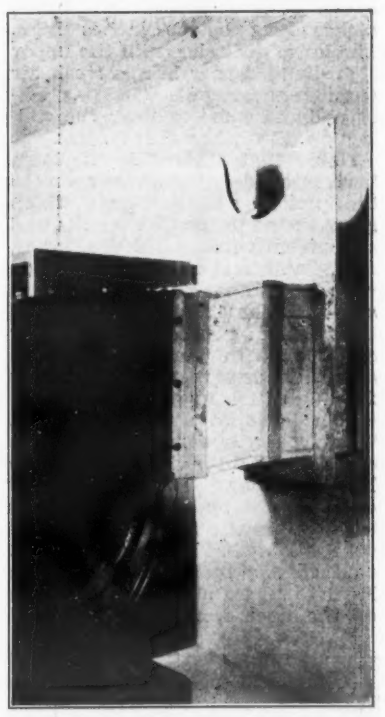
At point 11 in the diagram, a return duct was run down to the basement through the lower shelf of a built-in bookcase as shown in the picture above.

The matter of cutting into a nice job of oak woodwork was debated for quite a while before taking the step shown above but it seemed to be the simplest and most sightly method.

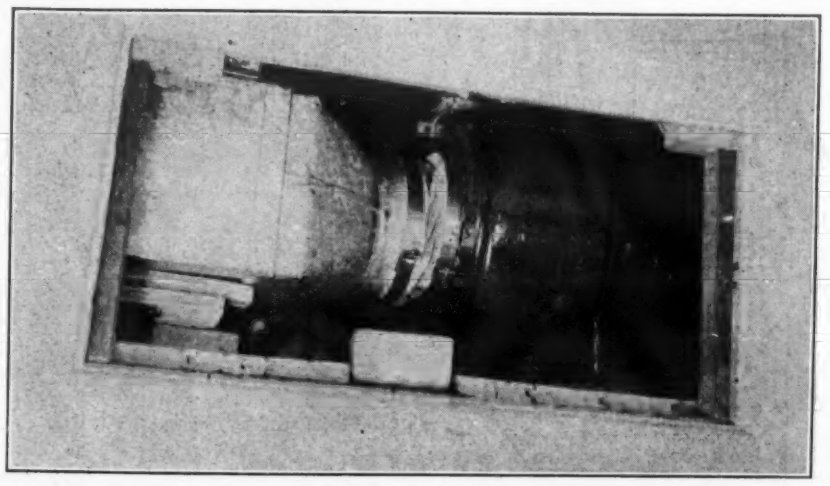
After all a bookcase is made to put things in and when we have carefully placed an atlas in front of the pipe, no one will ever notice it.

We did not like the idea of floor registers which conduct noises and collect dimes and other things dropped.

Tight Fitting Damper



Ventilating Fans Run All Day Summer & Winter

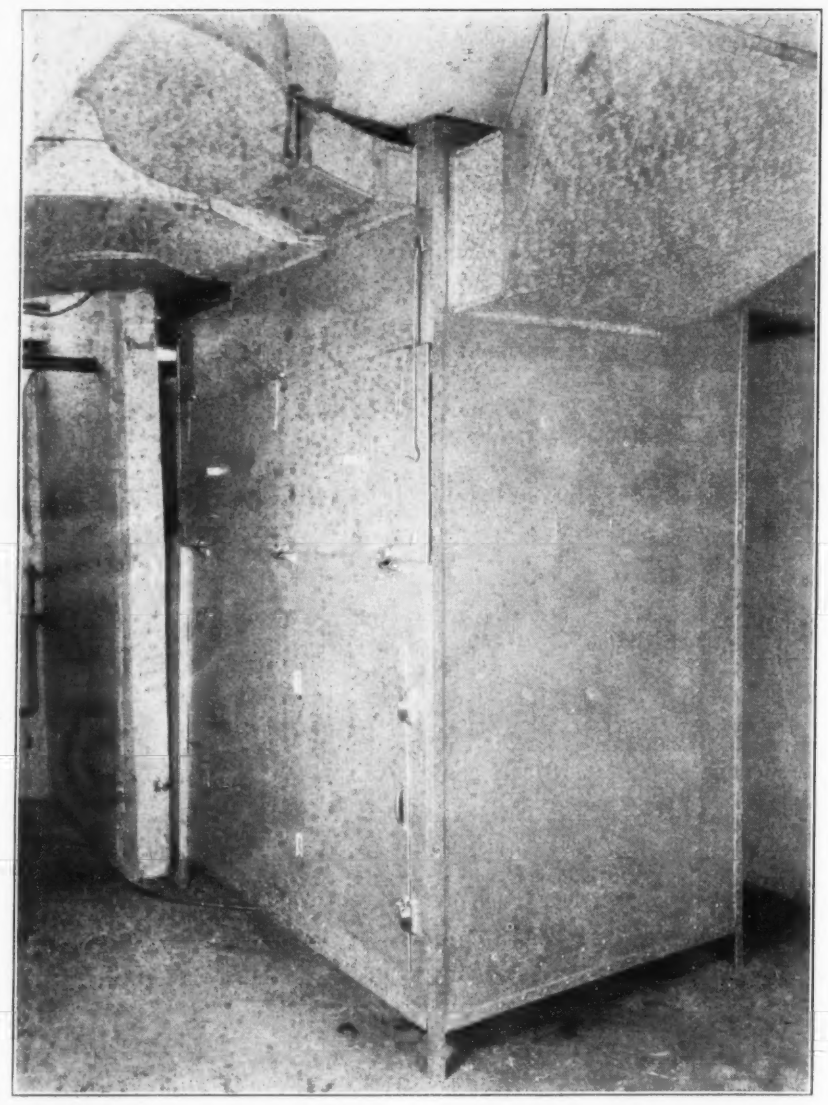


One of the Ilg ventilating fans installed in a cubby-hole under the roof.

No Registers Were Permitted in Floors

We found a waste space under the stair and used it to conceal a return duct to the basement. See point 8 in plan. Nora Wright is the young lady at the desk in the main hall.

Compact Air Cooling Cabinet Built to Fit Space Available

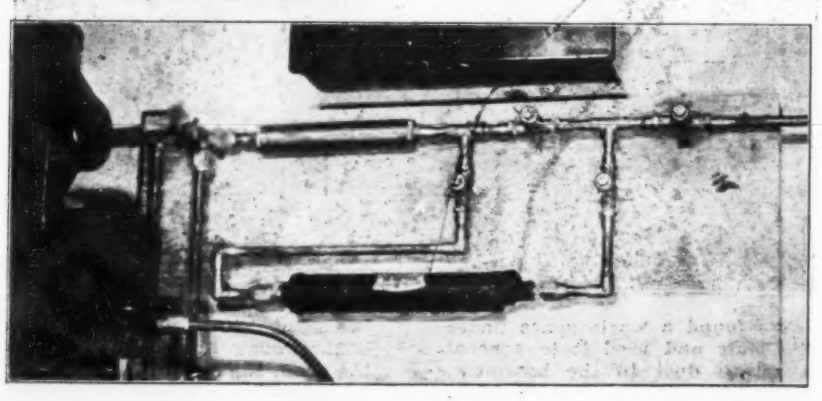


The air-cooling cabinet shown above was designed entirely by Mr. Cockrell to fit the available space. It is 44 inches wide by 66 inches long by 88 inches high. The large duct shown in the upper right-hand corner brings fresh air from a basement window. Return ducts come in near the ceiling on the other three sides.

Note that there is a long, horizontal door (shown open in the picture at the right) which gives access to the filters, coils, and expansion valves. In the lower, right-hand part of the cabinet you will see another door which gives access to the chamber underneath the coils. If you opened this door and looked in, you would see an extension two feet wide by four feet high (see small picture below) which leads to the two blowers. The circular opening (24 inches in diameter) is the in-take for the large blower. The rectangular opening (18 by 24 inches) leads through to the small blower (in-take diameter 12 inches). The cabinet was built by Harrigan & Reid Co. who also installed most of the duct work.

The floor plan of the air-conditioning room in the basement is shown at the right. The dotted lines indicate return air ducts on the ceiling which were fitted in between numerous steam pipes and other obstructions.

Below is a close-up of the liquid line connections between the compressors and coils. The Freon is being temporarily by-passed through a Dehydra-Tector made by Henry Valve Co.



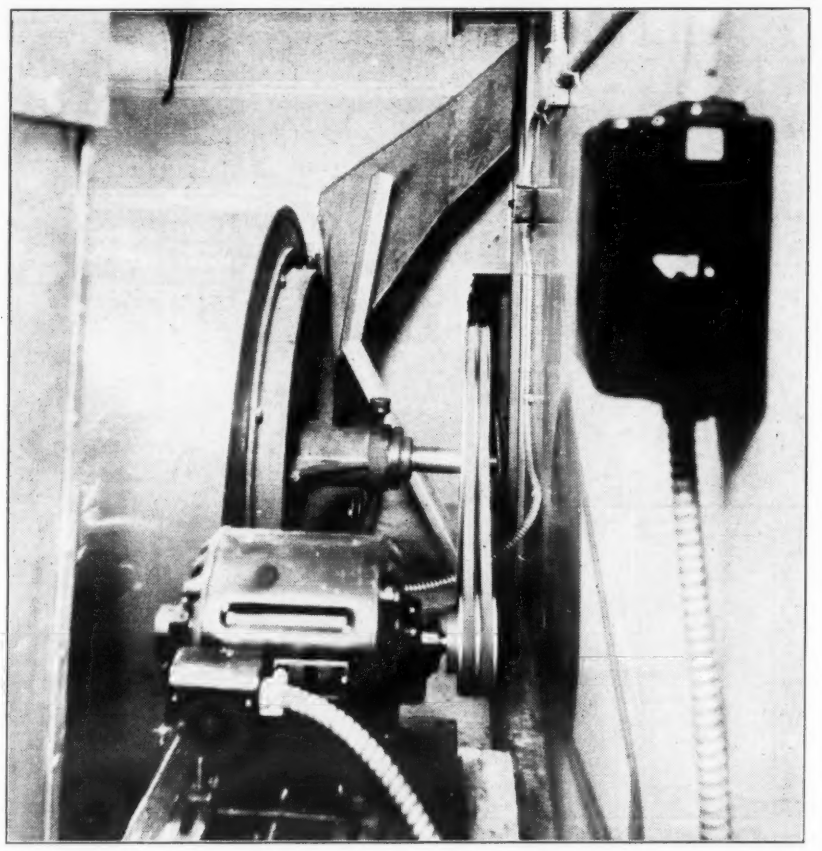
Third-Floor Blower

Shown above is a 12-inch Sirocco fan which runs at 629 r.p.m. and has a capacity of 870 cu. ft. per minute. It serves the third floor only. The discharge is vertical. It is driven by a ¼-hp. General Electric capacitor motor.

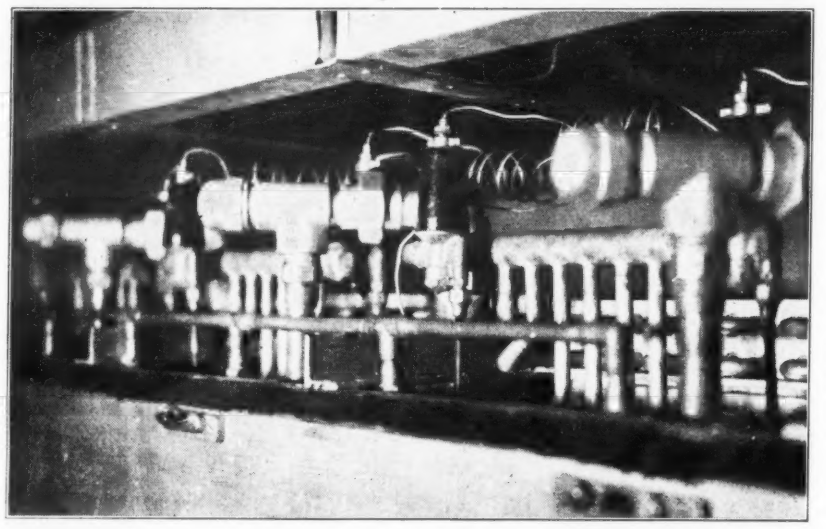
Below and in the lower right-hand corner picture are shown the Model 446 FW self-contained condensing unit made by York Ice Machinery Co. and installed by Westerlin & Campbell Co., Detroit sales agents. It is driven by a 7½-hp. Century motor, 220 volt, 3-phase with an Allen Bradley starter and Minneapolis-Honeywell pressure control. The electric panel is by Square D Co.

Everything Accessible

3,800 Cu. Ft. of Air Per Minute



The Wagner motor in the foreground is 1 hp., 220 volts, 3-phase, connected to the blower with a double V-belt Allis Chalmers drive. The Sirocco fan (No. 4, single inlet, single width) is made by American Blower Co. and is designed to operate at 310 r.p.m. with a delivery of 3,800 cu. ft. per minute. The discharge is at an angle of 45° so as to sweep upward into the main supply riser.



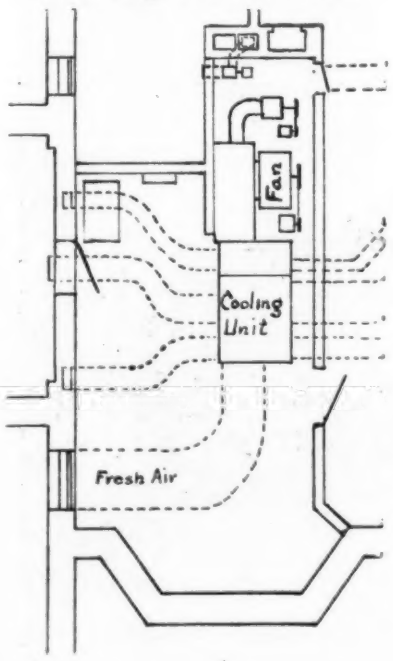
At the top of the picture above may be seen the filters set in a horizontal position. As shown by other pictures the return air ducts enter a plenum chamber at the ceiling. The air then flows downward through six American Renu-Vent filters, each 20 inches square.

Below the filters are three Fedders coils having a total surface area of 287 sq. ft. and a total capacity of 7½ tons of refrigeration. The finned portion of the coils are 18 inches wide by 28 inches from front to back and 11 inches from top to bottom. Each coil is equipped with two Fedders Model 33 thermostatic expansion valves, with an orifice of .156 inches.

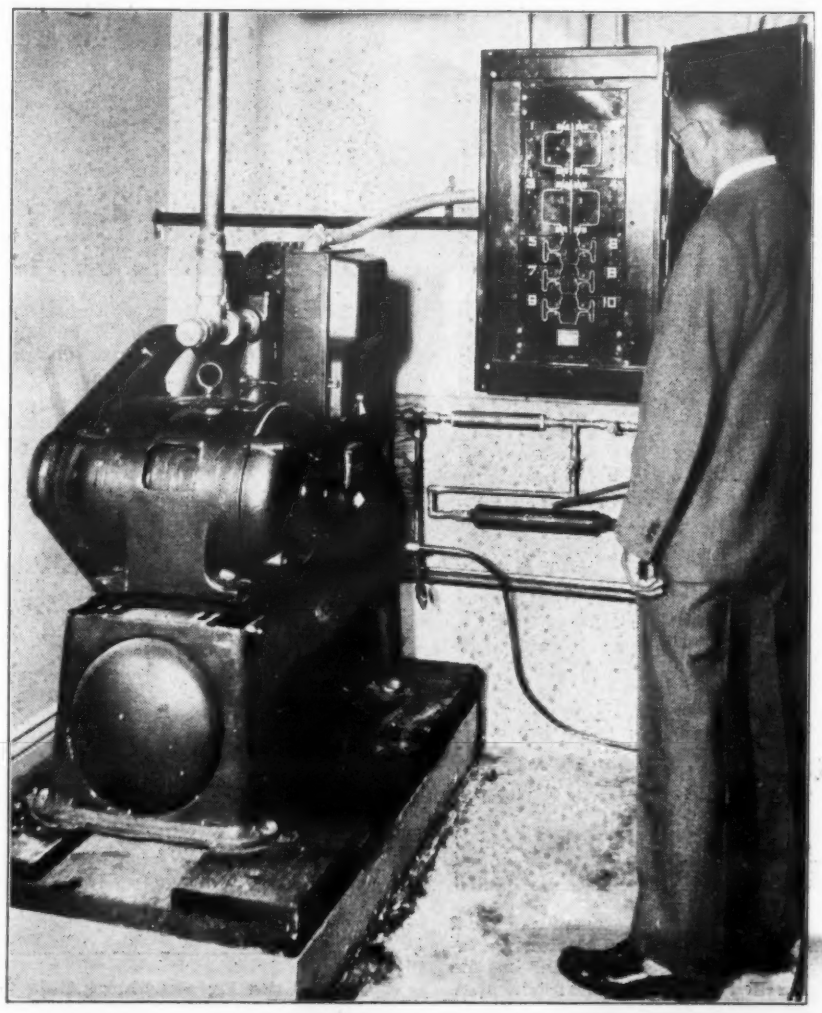
The liquid line is of ⅜-inch hard-drawn copper tubing with Mueller streamline fittings. The suction line is of 1¼-inch copper pipe, also with Mueller fittings, and each of the three coils is connected with two York valves.

The picture at the left shows one of the filter frames removed through the hinged door which gives access to both filters and coils. To renew the filter pads it is only necessary to open the door and slide the filter frames out.

Cooling Room Plan



Concrete and Cork Base Insure Quiet Operation



AIR CONDITIONING

Baltimore Building Is Air Conditioned By Carrier System

BALTIMORE — Air Conditioning, Inc., distributor for Carrier air conditioning, has installed a year-'round system in the new four-story building which forms the headquarters of the Read Drug & Chemical Co.

The building, in addition to housing the firm's offices, encompasses a retail drug store, two lunch rooms, and a beauty parlor.

Refrigeration equipment installed to cool the building includes Carrier Freon compressors supplying 70 tons of refrigeration, and three Carrier direct-expansion cooling units.

A blower system with a rating of 35,000 c.f.m. distributes air to Carrier high diffusion distributing outlets. Outside air is introduced at the rate of 10 c.f.m. per person.

A dry bulb temperature of 80° F. with 50 per cent relative humidity is maintained by means of Minneapolis-Honeywell controls.

Air Conditioning, Inc., has also installed a year-'round system in Millar Bros. restaurant.

A 20-ton Carrier Freon compressor, operating in conjunction with a Carrier 39M7 direct expansion cooling unit, provides a dry bulb temperature of 80° F. with 50 per cent relative humidity.

Temperature control is by a two-point Penn thermostat.

Refrigerant Valve Is Designed by Myers

ST. LOUIS—In conjunction with the inventor, A. F. Hoppe, the Myers Engineering Equipment Co. of this city recently introduced a new electro-hydraulic valve and an electro-magnetic valve, according to George Myers, president. They are designed for remote control of refrigerant, oil, gas, or water lines.

The electro-hydraulic valve is designed for pressures up to 250 lbs., and is made in sizes of ¼, ½, ¾, and 1 inch. It consumes 16 watts per hour when open, and automatically closes when the current is off. Line pressure opens and closes the valve. It is made of steel bronze or of a non-magnetic iron body, and has already been in use with ammonia, air, carbon dioxide, Freon, steam, and water, says Mr. Myers.

At present, the electro-magnetic valve is made only in the ¼-in. size. Made of substances similar to those used in the electro-hydraulic valve, this device has an attached housing for a solenoid or magnet.

When the magnet is energized, it rolls the ball horizontally from the valve seat and retains it against the wall as long as the current is on. This releases the pressure which surrounded the ball, and permits passage of the element through the valve. When the current is shut off, the ball rolls back on the seat, closing the line.

Air Conditioning Aids Hotel Business

CHICAGO—Predicting that the day is coming when air conditioning in hotel rooms will be indispensable, John L. Horgan, general manager of New York City's Hotel Edison, recently made the following statement to *Hotel Monthly* after a tour of cities in the midwest:

"The outlook for hotel business has vastly improved during the past six months, particularly in those hostelries that are being air conditioned. Hotel men are going to be the marshals of the parade back to prosperity and already are contemplating vast improvements in their buildings.

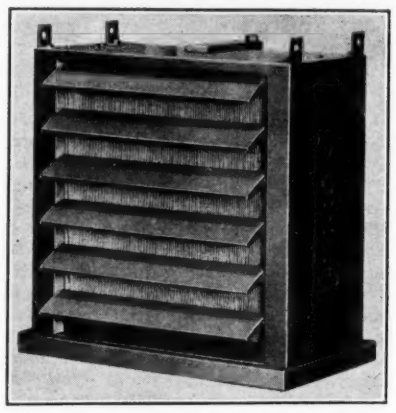
"One of the greatest boons to our industry is the development of air conditioning . . . What a comfort it will be to the professional or business man who has to wrangle hours with a knotty problem in his room, compared to present-day conditions when his only relief is an electric fan. The industry is only in its infancy, but it will soon prove to be one of the most indispensable services that a modern hotel can provide."

Brunswick Bar Placed In Spirits Club

NEW YORK CITY—The Spirits Club at 1819 Broadway here has installed a special Brunswick bar designed by Kenneth Norton, architect, using mechanical refrigeration for cooling the beer.

Membership of this club comprises wholesalers, distillers, and vintners of wines and liquors; owners, operators, and executives of breweries; executives and key men of bar fixture manufacturers, and other executives and key men of all industries allied in the beer, wine, and liquor field.

'Streamaire'



Young Radiator Co.'s new unit cooler fitted with air directioning louvres, serpentine coil, condensate pan, and patented airfoil motor bracket.

* * *

Young Co. Introduces Line of Unit Coolers

RACINE, Wis.—Young Radiator Co. has just introduced a new line of unit coolers and combination heater-coolers of the suspension type, for room cooling, product cooling, and heating applications. Several different models are included in the new lines, F. M. Young, president of the firm explains.

Type XC is for direct expansion of all common refrigerants except ammonia. These have copper coils of serpentine construction, with copper fins assembled vertically to accommodate vertical drainage of condensation. Tubes and fins are fusion bonded.

A special feature of the XC coolers is their air direction louvers by which one can adjust the direction of the air. Propeller fans are used, and all units are equipped with hangers for suspension from above.

Type BC is a unit cooler for use with refrigerated ice water or brine, type XAC has steel tubing and copper fins for use with ammonia.

Types BC, XC, and XAC are made in three models each, largest of which are rated at 1.9, 4.0, and 3.3 tons of refrigeration, respectively, with an 80° entering air temperature and a refrigerant temperature of 40° F.

Type XBC is a low-temperature forced convection cooler for product storage rooms, holding rooms, etc. where temperatures lower than air conditioning for human comfort are required

The cooling element of the XBC models is similar in construction to the type XC coolers, being applicable for all common refrigerants except ammonia, but is made deeper and with more coils and a larger surface to give greater cooling effect. These models are furnished without air direction louvers, as directed air is not ordinarily required for product cooling.

The combination heater-cooler, type HC, is designed so that it can be used with refrigerated ice water or brine as a comfort cooling unit in summer, and in connection with a steam or hot water heating system in winter.

This heater-cooler unit has copper tubes and fins, with cast nickel alloyed iron headers to distribute the heating or cooling medium. It has a drip pan, moisture eliminators, and hangers for ceiling suspension.

Buffalo Forge Co. Has Drip-Pan Mounting

BUFFALO—A new drip-pan mounting for its type HVA fans has been introduced by the Buffalo Forge Co. here. The base is constructed of sheet metal, welded at all seams, and leak-proof. Pan is large enough to catch dripping condensation, and a drain connection is provided.

Clips are furnished for attaching a casing around the coil or filter and enclosing the fan inlet. This casing may be of sheet metal or insulating board. Where extremely quiet operation is desired, the entire unit-pan, fans, coils, and casing, may be mounted on floating rubber insulators to isolate the unit from building foundations.

Buffalo Forge engineers recommend that when surface-cooling coils are used, the pan and fan housings be dipped in black asphaltum paint to prevent rusting. Brass wheels may also be used for this.

Buffalo HVA fans with drip-pans are being manufactured in eight sizes.

Carrier Equipment Cools Washington Building

WASHINGTON, D. C.—An entire building occupied by the Raleigh Haberdashery was recently equipped with Carrier air conditioning by National Electric Supply Co., Carrier dealer in this city.

Research Engineers Study Ozone Content & Vitality of Air

By Dr. L. W. Chubb,
Director of Research,
Westinghouse Electric & Mfg. Co.

AIR conditioning a hotel is more of an undertaking than most people realize. The air in a hotel is a component part of the hotel. In the lobby there are tons of air; in the usual single guest room, approximately 200 lbs. of air. This air has to be changed, processed or conditioned several times per hour. It is a service, in weight and bulk of material handled, many times all of the other services combined.

Most people associate air conditioning with the simple cooling of the inside air in summer. It is more than this. To meet the required conditions for comfort and health, it is necessary to control the humidity, as well as temperature. In winter, we add heat and moisture. In summer, we must cool the air and reduce the humidity. These are the most important functions of air conditioning today. Upon them, we will continue to build and to refine the indoor weather.

Ozone Missing from City Air

There are other air conditions being studied in the research laboratories. If we follow nature, we will never make very serious or many mistakes. Normally, the air contains ozone; it is clean, clear, odorless; there is ultra-violet light from the sun; the air is spontaneously ionized by cosmic rays from space and by emanations from radioactive materials in the ground.

In the big cities, especially indoors, these natural conditions no longer exist. Ozone is missing, ether can't form, due to smoke, or because what may form or drift in from the country is destroyed in oxidizing sulphur fumes and other polutions. The smoke and dirt are objectionable, ultra-violet rays are filtered out of the sunlight, the ionization is reduced especially indoors by the respiration of the occupants of a room.

The physiological effects of all of these are being studied and new apparatus is being developed which can be applied in the future. You all know of the work that has been done in producing ultra-violet rays in the indoors. We now have simple sources of radiation that produce ozone which can be controlled to give the desired concentration in the air. There is some dispute as to the advisability of using ozone, but since it exists in the most healthful places, it must be useful, and at least, we intend to find out.

Air Loses Vitality

Indoor air loses its vitality and general supposition is that it becomes stuffy because of lowering of the oxygen content and the increase in carbon dioxide. The indications are that stuffiness and lack of vitality are caused mostly by a change in the electrical condition, the destruction of ions which are produced by natural causes and have important effects on our feeling and the functioning of our bodies. Here is another subject which is being studied with a view of including it at a future date.

The cleaning of air to free it from dust and smoke is of importance in our smoky cities, and in the summer time, it is important to take out all the pollen and dust particles which are the great offenders in producing hay fever and similar troubles.

New Type of Air Cleaner

A new form of electrical air-cleaner has been worked out in the laboratories which will be a great improvement over the current methods. It effectively takes out not only the large smoke and dust particles which can be filtered out mechanically, but it takes out the minute submicroscopic particles, which soil the curtains and drapes, and cannot be taken out by the usual filtering and washing systems. By these cleaning methods, pollen is so effectively removed that regular periodic pollen counts taken last summer in hospital rooms equipped with this type of cleaner showed not a grain of pollen to be present in the treated atmosphere.

Removes Pollen from Air

Air conditioning has been shown to give great relief from hay fever, and it has been found that this relief is greatly caused by the lowering of the pollen count, because in recirculating the air, the pollen particles impinge upon and stick to the wet evaporator. This, combined with the lower temperature, is, we think, of importance in the control of the great American sneeze.

All of these and other new functions which will be called air conditioning in the future are, we believe, sure to be included, so that in the future we can expect the climatic conditions of our home, office, or hotel to rival those at the shore or mountain resort.

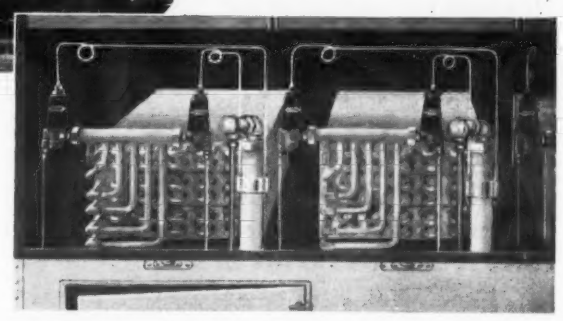
A Tribute to the

WORLD'S NEWEST INDUSTRY.....

Air Conditioning

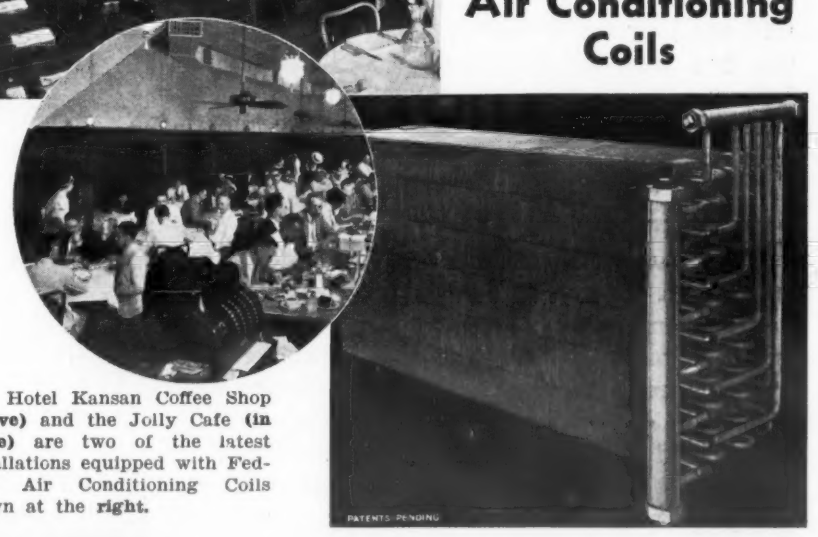
Air Conditioning is commercial refrigeration on a tremendous scale. In addition to cooling refrigerators and show cases, the industry is now cooling everything—from a single room to an entire building—WITH FEDDERS ALL-COPPER AIR CONDITIONING COILS AND ROOM COOLER (COMFORT) COILS.

.... THE ELECTRIC REFRIGERATION NEWS Practices what It Preaches!

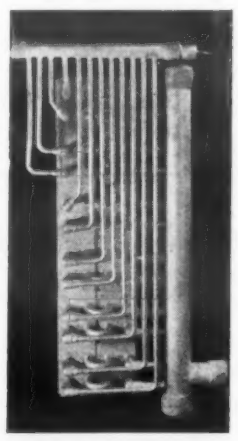


The new home of ELECTRIC REFRIGERATION NEWS is completely air conditioned. Three Fedders Air Conditioning Coils having a total capacity of 7½ tons I.M.E., and equipped with Fedders Thermostatic Expansion Valves, are doing the job.

Restaurants, Hotels, Stores, Equipped with FEDDERS Air Conditioning Coils



The Hotel Kansan Coffee Shop **(above)** and the Jolly Cafe **(in circle)** are two of the latest installations equipped with Fedders Air Conditioning Coils shown at the **right.**



End view of a typical Fedders Air Conditioning Coil. The top manifold is the Liquid Manifold equipped with connections for Thermostatic Expansion Valves at each end. Vertical Manifold is the Outlet Manifold.

How Fedders Carries on with Air Conditioning Coils which Provide and Maintain Lifelong Efficiency . . . . .

All-Copper Construction with Copper Fins Fused to Copper Tubes

Fedders design provides the heat transfer efficiency of copper and maintains it by the permanent Metal-to-Metal Bond between Copper Fins and Copper Tubes. Fedders heating and cooling coils are made for all standard refrigerants and in unlimited tonnage capacities for air conditioning and room coolers. Mail your prints or data on your requirements for recommendations and prices.

Are You Getting Your Copy of the FEDDERS NEWS?

FEDDERS MANUFACTURING CO.
57 TONAWANDA ST., BUFFALO, N.Y.

300 4th Avenue, New York City — 603 W. Washington Blvd., Chicago
222 E. Ninth St., Cincinnati — 209 S. Pearl St., Dallas — 923 E. Third St., Los Angeles

WHEN YOU BUY FEDDERS YOU BUY THE BEST

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office
Copyright, 1934, by Business News Publishing Co.
Published Every Week by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich. Telephone Columbia 4242.
Production Dept., 550 Maccabees Bldg., Columbia 4245.

Subscription Rates—U. S. and Possessions and all countries in the Pan-American Postal Union: $3.00 per year; 2 years for $5.00. Canada: $6.00 per year (due to special tariff). All Other Countries: $5.00 per year (U. S. Money)

F. M. COCKRELL, *Publisher*

GEORGE F. TAUBENECK, *Editor*
JOHN T. SCHAEFER, *Engineering Editor*
PHIL B. REDEKER, *Assistant Editor*
ELSTON D. HERRON, *Staff Writer*
A. J. CUTTING, *Statistician*

GEORGE N. CONGDON, *Business Manager*
HOWARD W. MATEER, *Advertising Manager*
JOHN R. ADAMS, *Production Manager*

Member, Audit Bureau of Circulations
Member, Associated Business Papers
Member, Periodical Publishers Institute

VOL. 12, NO. 18, SERIAL NO. 284, AUGUST 29, 1934

Installation Problem

HERE is a dramatic story: During the recent hot wave which affected most of the entire country, ELECTRIC REFRIGERATION NEWS received a call from a housewife late one evening. She explained the problem which was confronting a friend and neighbor of hers. The aged father of her friend was very critically ill. He had taken sick in his bedroom on the second floor, west side of the house. He was too ill to be moved to a hospital or even to another room. The room was excessively hot, and the old gentleman was suffering greatly. The daughter frantically wanted to know if there was any kind of an air-conditioning system which could be installed *that night,* because they thought that it might save his life.

Now what kind of an answer would you give in a case of that kind?

Visions of the commotion, mess, and racket which would be caused by some mechanics installing an air-conditioning system of any type we know of, *in a room in which an aged man was on his deathbed,* were truly appalling.

We could think of no really satisfactory answer to meet an emergency of that kind. We told her to get a wash tub, fill it full of cracked ice, and turn an electric fan on it. We know from experience that such a home-made plan will really work, even though it is, of course, not the kind of a system which anybody would want to bother with—except under the dire stress of an emergency.

The family is in good circumstances, and could well afford any reasonable cost for an installation. Because of the emergency they were self-sold on the idea. The whole problem was one of speed and simplicity of installation. But where could you find an air-conditioning dealer who could meet an emergency like that? In general, it would seem reasonable that a good many people—not only those faced with an emergency—are probably waiting for some kind of an air conditioner which can be installed like an electric fan, or at least with no more fuss and bother than a radio.

As result of our experience here at the NEWS, we are convinced that the matter of installing air ducts, for instance, is not such a difficult one as people would ordinarily assume. We are quite sold on the idea of a circulating air system, one which will bring fresh air into the house as well as recirculate the cooled air to some extent. Most of the objections to present installations, even in stores, etc., is that the air becomes stale and does not have a sharp, invigorating quality.

We have an idea that there is room for some inventive genius to work out a system of ducts on some kind of a standardized basis which could be installed in an old house without making it necessary to call on the tinner. The ordinary tinner is not house-broke. He is accustomed to working on gutters, downspouts, etc. *on the outside* of a house. It would seem reasonable that some sort of collapsible duct work could be devised—not necessarily made of metal—with suitable elbows and other fittings which could be installed in a house without involving so much racket and confusion as the metal work job does.

Trade Education

ADMITTED by almost all men who are close to the air-conditioning industry is the fact that a great state of confusion existing in the trade itself is handicapping expansion of the business. For instance, in negotiating with various salesmen who called on us when the news got out that we were going to air condition the new home, we were amazed at the conflict in the advice received. We started out with the idea that we wanted the washed air system. It was our theory that only a fine spray of water could really clean the air of fine particles of dust, cold germs, and other impurities.

A number of salesmen substantiated this theory; others disputed it. At first, we were not impressed by the arguments that air filters were sufficient to clean the air. Not until a representative of the Carrier Corp. explained the detailed differences between the washed air and direct expansion systems, and recommended that we use the direct expansion system for this installation, were we convinced. Knowing that Carrier was a pioneer in the use of the water spray system, this representative's advice was truly impressive.

Later, a representative of a filter manufacturer called our attention to the fact that most of the dirt in city air consists of soot, automobile fumes, and other *greasy* dirt. This type of dirt is caught by the oil covered filter material, whereas he argued that water does not dislodge this kind of dirt at all.

Among other things, we learned that a vast amount of educational work needs to be done *in the trade* before great progress will probably be made with *the public.* The public would like to have conditioned air—people have heard so much about it. But we are inclined to believe that the trade is very poorly prepared to explain air conditioning to the public. This does not hold true for the direct factory representatives who have spent a number of years in close contact with air-conditioning developments, but it certainly does apply to the ordinary dealer, who knows little about it other than what he has read in highly generalized company literature, and what he has digested and assimilated of the factory training course he may have received.

And because so many air-conditioning dealers are not well enough equipped to talk intelligently to a prospect, the prospect is likely to be confused, and to become convinced that the product is still in the experimental stage.

During the past year practically all manufacturers of air-conditioning equipment have devoted most of their educational efforts toward the public—which already is well sold on the idea. Perhaps the cause of the industry could be advanced further by striking a better balance between trade education and public education. Knowledge of so complex a subject as air conditioning on the part of dealers and salesmen is not something which can be taken for granted. Only by patient, educational effort can manufacturers impart to their sales forces the education they need to give the air-conditioning industry the proper impetus toward its long-predicted boom.

WHAT OTHERS SAY

Creditors' Rights

FEDERAL loans and commitments to states, cities and other political units in America now exceed $800,000,000, and according to the Associated Press, the total eventually will reach $1,200,000,000.

This sum distributed through the PWA and the RFC is theoretically to be repaid; but meanwhile it will, in effect, constitute an immense mortgage of nationwide dimensions held by Washington.

There may be no means for foreclosure in case of defaults. Indeed it is likely that before the tale is all told defaults of a defiant sort will take place. But the Federal Government nevertheless will stand in the role of a powerful and watchful creditor, ready and able in many ways to demand that its interests be regarded and safeguarded as it considers proper.

What effect this situation may have on the free exercise of local self government and even on constitutional state rights are matters which, we think, have not been very carefully regarded by most borrowers up to this time. They will be considered very thoughtfully later on.—*The Detroit Free Press.*

LETTERS

Sellman Elucidates Servel's Policy

Servel Sales, Inc.
Electrolux Refrigerator Sales, Inc.
New York, N. Y.
Aug. 21, 1934.

Editor:

The story which appeared in the Aug. 15 issue of ELECTRIC REFRIGERATION NEWS under the heading "Servel Electric Continues Sale of Commercial" may not convey to your readers an entirely accurate impression of the policy of Servel, Inc., with respect to commercial refrigeration and air-conditioning equipment—hence this letter.

The facts are as follows:

1. Servel, Inc., will continue to manufacture and market commercial refrigeration and air-conditioning equipment of the electrically actuated compression type.

2. Principal outlet will continue to be through distributors and dealers.

3. Normal contacts and cooperative measures will be maintained between Servel, Inc., and its distributors.

4. The "most recent information" set forth in your story which, according to your report, was "neither confirmed nor denied by Servel executives" is without foundation in fact.

5. Continuation in commercial refrigeration and air conditioning by Servel, Inc., is the result of policies in which all members of the management of Servel, Inc., have at all times been in full agreement.

6. Operation of any type of any refrigeration business "without sales expense" and with "all orders taken by mail" is manifestly absurd. The Commercial Refrigeration Division of Servel, Inc., will operate under conventional policies. Sales expense will continue to be consistent with sound practice.

Please print this letter in its entirety and give it the same prominence that you gave your Servel story.

F. E. SELLMAN,
Vice president.

No Cooler Like Temprite

Temprite Products Corp.
1349 East Milwaukee Ave.
Detroit, Mich.
Originators of Instantaneous Liquid Cooling Devices
Aug. 23, 1934.

Editor:

Our attention has been drawn to a letter which appeared in your "Questions" column in your issue of Aug. 15, headed "SO_2 Beer Cooling Units," where, in your question No. 1802, the following inquiry is presented: "If you know of any manufacturer making a system similar to Temprite, have them get in touch with us immediately, etc." Your answer to this was as follows: "Systems similar to that of Temprite are manufactured by Commercial Coil and Refrigeration Co. of Chicago and by Frigidaire Corp. of Dayton, Ohio."

Up to this point we have been considerably impressed by the service which you have been rendering in your "Questions" column and by the apparent accuracy of the information which you have furnished through this medium. We were greatly surprised, therefore, to note the misrepresentation contained in this particular reply, because neither of the coolers referred to could in any way be construed as being similar to Temprite, the basic principles of which are thoroughly covered by Letters Patent. In the event that your advice was given in ignorance, may we point out to you that the cooler manufactured by the Commercial Coil and Refrigeration Co. of Chicago operates on entirely the opposite principle from Temprite, inasmuch as it employs the indirect method of heat transfer, using a brine bath to conduct the heat from the beer to the refrigerant, while, as you know, one of the outstanding principles of Temprite is its direct heat transfer.

We should appreciate very much if you would correct the impression created by your reply because we should not like to have anyone gather the impression that Temprite is similar to either of the two coolers referred to in your column.

JOHN WYLLIE, JR.
Sales manager.

To Continue Subscribing

Mack-International Motor Truck Corp.
25 Broadway, New York, N. Y.
Aug. 8, 1934.

Editor:

This is to acknowledge receipt of your check No. 1737 for $.25 covering rebate for unfilled portion of subscription for the publication REFRIGERATED FOOD NEWS.

We are cashing your check and will continue our subscription for ELECTRIC REFRIGERATION NEWS when the present subscription therefor shall terminate.

GEO. O. HANSHEW,
General sales department.

High Class Paper—Long Wheel-Base

Radio & Electric Appliance Journal
1270 Sixth Ave., New York, N. Y.

Publisher:

—yes, I was worried about that, and couldn't understand why it took so long to get the rebate. It certainly is very poor service and I am astounded that a high-class paper like yours has such a long wheel-base.

—you are like a Scotch terrier—wouldn't even give you his paw.

—but it was a great gag, F.M., and it ought to be a great publicity stunt for you. Who would ever dream that I had 13 cents coming in from Detroit?

GLAD. HENDERSON,
Editor.

No Interruption Wanted

Flushing, N. Y.

Editor:

Please change my mailing address from 434 E. 70th St., New York City, to 140-34 Quince Ave., Flushing, Long Island, N. Y., effective at once as I do not care to miss a single issue.

STEPHEN F. HARRISS.

No Discontinuity, Either

Electrolux Refrigerator Sales, Inc.
(Far Eastern Organization)
Hong Kong

Editor:

Herewith enclosed please find a draft on the National City Bank of New York for U. S. $5, to cover my subscription up to next June.

I regret that owing to my traveling, your account has been delayed in reaching me, and the draft therefore is somewhat overdue, but please see that there is no discontinuity in the numbers of the ELECTRIC REFRIGERATION NEWS which are sent to me, and which I greatly value.

C. V. MIDDLETON.

Ditto Above

Miller & Sedden Co., Inc.
Cambridge, Mass.

Editor:

We have received a card informing us that our subscription for the NEWS is expiring next month. What we would like to know is do you still have the same offer that we used the last time, and that is two-year subscription for five dollars? Please let us know as soon as possible so that we will not miss any copies.

RICHARD R. SEDDON.

We're 'Way Ahead Of You, Mister

Chattanooga, Tenn.

Editor:

I am writing a number of articles on the various phases of development under the Tennessee Valley Authority. Being on the ground I have been afforded the most favorable opportunities to observe the practical as well as theoretical working out of this huge experiment which is unquestionably of real importance to the entire country.

It occurred to me that an authentic, well illustrated article on the extension of electrical refrigeration throughout the valley as a result of cheap power, both available and anticipated, and the concentration of sales efforts along all lines of electrical appliances should be of interest to your readers. The undertaking is certainly unique and news of its progress most timely.

PAUL SEVERANCE.

Answer: Mr. Severance is respectfully referred to practically every issue of ELECTRIC REFRIGERATION NEWS since early spring, and particularly to the Aug. 8 issue.

Holmes Service Manual

Wayne's Vacuum Repair Shop
319 E. Main, Shawnee, Okla
Aug. 26, 1934.

Editor:

In the issue of Aug. 22 in the letter section you ask if some one would loan you a copy of the Holmes Service Manual. Therefore I am mailing you under separate cover my copy of the manual with the request that you return it when through with it.

Several weeks ago I noticed in the NEWS that you were thinking of publishing a service manual for all makes of refrigerators. I think this an excellent idea and will take a copy if and when it is ready. I think one section should be included listing shortcuts and kinks that a service man learns although it might not be according to Hoyle. Also if parts could be exchanged from one system to another it might be a good idea to list them as some systems are hard to get parts for. I have a copy of the Official Refrigeration Service Manual but it is not as complete as I would like and if you do publish a manual it would be better to have too much data than not enough.

J W. WAYNE.

AIR CONDITIONING

Rotogravure Plant Is Air Conditioned

By John T. Schaefer

DETROIT—Air conditioning has been called upon by the Free Press Photogravure Co. here to produce uniform air conditions for several processes in photogravure work which require closely controlled temperatures and humidities. The system installed was designed by B. Offen & Co., a Chicago engineering firm which specializes in air conditioning for printing plants, and utilizes two 10-hp. Universal Cooler condensing units for refrigeration.

The refrigerating machines are installed in a small room adjoining the large room in which the engraving processes are carried on. The air-conditioning cabinet itself occupies a corner of the large room.

The Free Press shop etches the copper cylinders used in printing rotogravure sections of the *Detroit Free Press*, and for three and four-color advertising literature purchased by outside firms.

It is a highly specialized business, brought to its present state of development by skilled technicians like Maurice L. Emick, superintendent of the Free Press rotogravure department.

One of the chief problems in this work is preservation of films, sensitized paper, and the gelatinous covering which is placed on the copper cylinders used in the printing process proper. These materials are hygroscopic, becoming brittle in winter if the humidity is too low, and losing their accuracy in summer if the humidity is too high.

So the air-conditioning system is used to maintain a uniform condition of 72° F. and 45 per cent relative humidity. Occasionally the release of steam in the room brings the relative humidity up to 50 per cent, but the air-conditioning system soon brings it down again, Mr. Emick states.

Previously, the Free Press used a large air washer only to condition air in the room, but this equipment was never completely satisfactory in maintenance of proper humidity. It has now been discarded.

Powers' controls are installed with the new system to regulate the proportion of fresh air to recirculated air, keeping a uniform inside condition by automatic introduction of from 10 to 20 per cent of fresh air. A positive air pressure is maintained in the room to prevent inward infiltration of outside air and dust. All windows are kept closed.

In multi-color work, one copper roller must be etched for each color of a printing job. Without air conditioning these rollers are prone to register differently because the film or gelatinous covering will change in size slightly with varying humidities.

Another problem in photo-engraving is to keep the films in good condition. Being hygroscopic, the large sheets of film must be kept in a dry place or they lose their uniformity. To do this, Mr. Emick has built a drying cabinet employing calcium chloride as a drying agent, and thermostatically controlled electric heaters to treat the films.

With this equipment it is possible to dry out films in 27 minutes—where it formerly took as long as three hours previously under bad conditions of rainy weather.

New Control Is Placed Outside of Building

(Concluded from Page 1, Column 2)

heating element is designed to, and by an adjustable resistance can be made to, bear the same relation to heat losses from the control housing as the heat release from the heating fixtures within the building bears to heat losses of the building.

Being subject to the same weather influences, and the same relative rate of heating and cooling, the temperature throughout the zone or building and the temperature within the control housing will maintain a fixed relationship, and the temperature in the control housing can be used as the pilot temperature or control temperature for the zone or building.

The Weatherstat is so wired that when the thermostat element in the control instrument calls for heat, the electrical heating element is energized and heat is supplied to the zone or building at the same time. When the required temperature in the Weatherstat is attained, the circuit to the heating element is opened and heat is shut off to the zone or building.

Thompson Restaurant in Memphis Is Cooled

MEMPHIS—One of the Thompson restaurants in this city recently installed a Carrier Weathermaker system to boost summer patronage.

Notes

By John T. Schaefer

Leases & Air Conditioning

That prospective leasees of retail stores will soon want air conditioning before they will contract for building space, just as most apartment house renters nowadays demand electric refrigeration, was predicted between the lines of a report on the real estate page of the *Chicago Daily Tribune* last week.

The report stated that two old established Chicago concerns—the Florsheim Shoe Co. and George Wittbold, florist—have just signed leases for new retail stores, and that they will assume occupancy this fall *as soon as the air-conditioning equipment is installed.*

Help, They Won't Get Off

A bit of humor was injected into Boston & Maine Railroad's advertisements this summer when they cartooned a very-much-disturbed conductor and colored porter discussing ways and means of deposing three contented travelers who were apparently so comfortable in an air-conditioned train that they wouldn't get off at their station.

The headline is "Help, they won't get off the trains!" The copy explains: "The conductor is perturbed—but the passengers are unmoved—they like the new air-conditioned trains between Boston-Portland-Bangor and intermediate points. One portly gentleman asked if he could rent one for the summer. 'The only comfort I've found,' he said. We had to remind him of our duty to the public and our schedules before he'd leave."

Asthma Study

Ten women with the most intriguing sneezes are being sought by the College of Medicine at the University of Illinois (in Chicago) for a study of sneezing under controlled air conditions, according to a United Press report.

"The women, who must be chronic asthma sufferers of the August and September variety, are required for a test to determine whether electrical charges in the air during storms cause the ailment.

"The test will be conducted by William H. Welker, head of the physiological chemistry department of the college.

"The women will be locked up for several weeks in a hospital ward in which the air is filtered, cooled, and dried. The air will be electrically charged, first positively and then negatively."

More Streamlined Trains

A sketchy report from Mobile, Ala., states that two air-conditioned, streamlined trains are being built for the Gulf, Mobile, and Northern Railroad to run between Mobile and Jackson, Tenn. They will be *the first of this type* to serve the South Mississippi Valley.

Similar in style to the Burlington's Zephyr, they will be Deisel powered, but with six sleeping cars, a drawing room, an observation car, and of light steel construction.

Rare Animal Forms

The New York National Museum is going to raise rare animal forms under controlled temperature conditions. Strange lizards which do not need light, but are extremely sensitive to temperatures are to be among the first specimens.

Cooling India's Airplanes

India may have the first air-conditioned passenger planes, according to information just received by the Department of Commerce at Washington, D. C.

A transportation company operating between Calcutta and Bombay over an area where summer temperatures of 115° F. are considered normal, and where 130° F. is sometimes exceeded, is experimenting with dry ice as an agent for cooling airplanes.

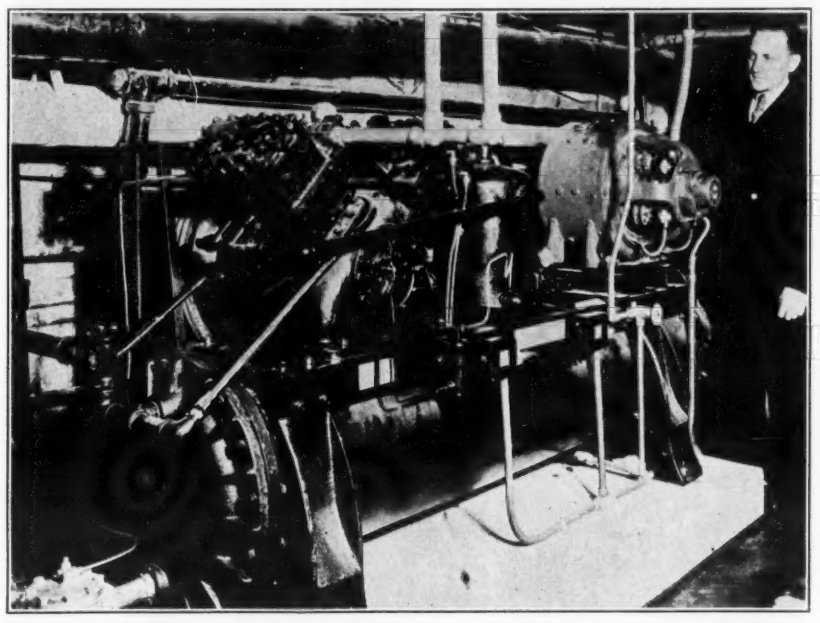
Underground Refrigeration

The St. Louis Refrigerating & Cold Storage Co. which operates a central refrigerating pipe-line service for downtown St. Louis this summer advertised in local newspapers for customers to use their refrigeration for air conditioning.

New Booklet

A prominent consulting engineer on air conditioning, Clyde R. Place of New York City, has issued a booklet entitled "Air Conditioning; Planned and Proved." Its 18 pages give an explanation of the various items to be considered in air conditioning a new building or installing a system in modernization of an old building.

Cooling Hotel's Tap Room



Frank Bitz, service manager of Kelvinator Corp.'s Boston branch, stands beside a 15-hp. Kelvinator condensing unit which is a part of an air-conditioning installation in the Ritz-Carlton hotel, Boston.

Lewis to Help Architects & Engineers With Air-Conditioning Problems

MINNEAPOLIS—Lewis Air Conditioners, Inc., of this city has established a special department to give engineers and architects consulting service on heating and air-conditioning problems for all types of structures, according to L. M. Butler, secretary-treasurer.

The company recently issued a catalog, "Lewis Air Conditioning," in which it presents its current line of air conditioners designed to heat, humidify, clean, and circulate air.

One of Lewis' newest products is a portable electric humidifier selling for $12.95. The device is urn-shaped, and keeps the humidification process in operation so long as there is sufficient water in the bowl to float the operating mechanism.

Roy Is Promoted by Conditioning Dept.

NEW YORK CITY—A. C. Roy has been appointed manager of the advertising division of General Electric Co.'s air-conditioning department, succeeding W. A. Bowe, resigned, according to J. J. Donovan, manager of the department.

Mr. Roy joined the Edison Lamp Works of the General Electric Co. in 1916. As a sales engineer he assisted in lighting the first airways, and invented an early type of electric airway beacon. While in the sales promotion department of the Edison works, he was transferred to Nela Park, Cleveland, when the Edison and National lamp divisions of the company were merged in 1930.

In 1932 he was transferred to the air-conditioning department, handling merchandise promotion, dealer meetings, sales campaigns, and sales training. In his new work Mr. Roy will continue to have his office at the General Electric building, 570 Lexington Ave. here, headquarters of the air-conditioning department.

Air Conditioners Ordered For Child's Restaurants

PITTSBURGH—One Carrier Weathermaker has been installed in a Child's restaurant here, and others have been purchased for one of the chain's eating establishments in Washington, D. C., and one in Cleveland.

Peck & Peck Store Installs Carrier System

NEW YORK CITY—Peck & Peck, specialty shop here, has installed a Carrier air-conditioning plant in another of its stores at 501 Fifth Ave.

A product is dependable only to the degree that dependability is built into it. For over ten years it has been recognized by the trade and the public that no electric refrigeration units offer more consistently dependable performance than those products of Universal Cooler. This fact alone reveals the character of Universal Cooler's manufacturing policy.

UNIVERSAL COOLER CORPORATION
DETROIT, MICHIGAN BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION EQUIPMENT

EH&FA Plans to Use Traveling Kitchen

CHATTANOOGA—Electric Home & Farm Authority is going to put a traveling electric kitchen on the road to show small-town and rural home makers what electricity can do for them.

Miss Eloise Davison, EH&FA domestic electric service director, announced plans for the "TVA Electric Kitchen" Aug. 18.

The kitchen truck will travel through northern Mississippi and northern Alabama counties where TVA power rates and EH&FA appliance financing are in effect. It will begin its tour in northeast Mississippi about Sept. 3.

Miss Ruth Frow of Maryville, Tenn., a member of Miss Davison's staff of home economics field representatives, will go with the truck to conduct cooking schools and make other demonstrations.

Visitors to the truck will see electrical appliances carrying the TVA-EH&FA emblem of approval, including an electric range, an electric water heater, and two electric refrigerators of types designed recently for the EH&FA program. Modern kitchen cabinets, utensils, and a sink also will be set up to show how well-planned kitchen arrangements can reduce labor.

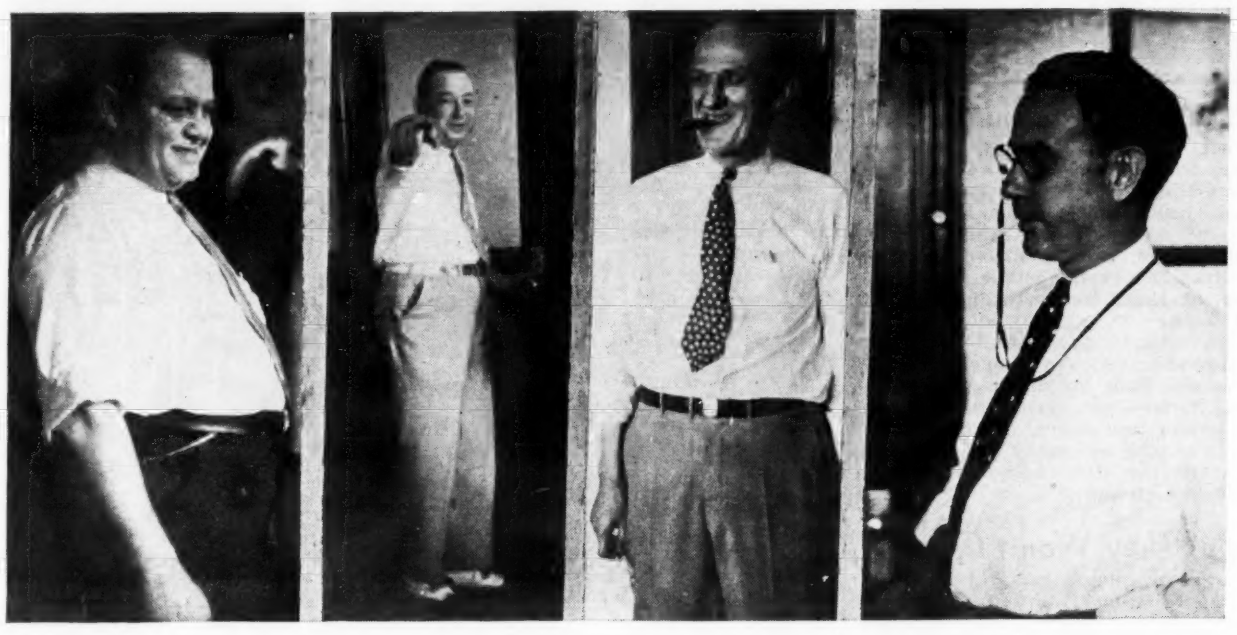
All equipment will be removed from the truck for cooking schools and displays.

It will be used in a portable kitchen setting, in any store, schoolroom, or other place chosen. Flexible wiring will connect the equipment with the nearest power source.

Maccabee Resigns from Stewart-Warner

CHICAGO—D. E. Maccabee, chief engineer of Stewart-Warner's refrigeration department here, has resigned from that organization as of the early part of this week. Mr. Maccabee was previously with Grigsby-Grunow, and before that was development engineer for Frigidaire in Dayton.

Norge Executives Enroll in White Shirt Brigade



(1) John Knapp, vice president in charge of sales, after a satisfying full meal cooked on the Broilator by Home Economist Betty Appel. (2) C. D. Donaven, treasurer, catches the photographer at work and cries: "Don't ever DO that!" (3) Western Manager R. E. Densmore. (4) Eastern Manager Glenn O'Harra.

Cold Storage House Is Planned for Capetown

JOHANNESBURG, South Africa—Construction will start soon on the cold storage chambers and laboratories to be built in Capetown by the South African government, according to Edward B. Lawson, acting American commercial attache here.

The chamber and laboratory will cost £30,000, of which £14,000 will be spent during the current financial year. Their construction will be a part of the government's plan for a pre-cooling store at Capetown.

Railways and Harbors administration of the government is planning to spend at least £600,000 on erection of new pre-cooling stores at coast ports.

Two Insulation Authorities Discuss Importance of Conductivity Values

Dry-Zero Corp.
Merchandise Mart, Chicago
June 27, 1934.

Editor:

Did Professor A. P. Kratz of the University of Illinois really say all the things credited to him in your report in your June 20 issue in his talk on insulation before the recent convention of the National Warm Air Heating & Air Conditioning Association in Chicago? Or did your able technical editor, John T. Schaefer, slip?

I ask because: (1) It is difficult to believe Professor Kratz made several statements credited to him, but (2) it is even harder to believe Mr. Schaefer erred.

Two particular puzzling remarks attributed to the professor are: (1) "Practically all insulations employ dead air pockets for their heat resistance effect since dead air space is about the best insulator known." And then: (2) "As a result, the natural insulating value of all insulations is practically the same, conductivity values ranging from .3 to .5."

The first statement, considering its source, surprises me because it deals with discarded theory. That there is no such thing as "dead air" is too well established to merit argument.

The molecules of air that fill the tiny spaces in an insulating material are flying constantly back and forth, endeavoring to carry heat from the warmer to the cooler side. Their difficulty in loading or unloading a full charge of heat energy on contact with the warm and cool sides, respectively, is the essential factor in determining the efficiency of the insulation.

This difficulty is directly related to the microscopic smoothness and other characteristics of the walls surrounding each tiny space and has little to do with the space itself. This coincides with Langmuir's accepted theory of mono-molecular absorption, doing away with the entire "dead air" myth.

The second statement is curious because it deviates from fact. Professor Kratz must know that all authorities have long since established conductivities of commercial insulants as low as .23, and he should know that at his own university an interesting laboratory insulating material has shown, under competent test, a conductivity as low as .15. This latter figure has also been obtained with another material.

Now, the *difference* between .23 and .5 is over 100 per cent, and between .15 and .5 is nearly 250 per cent. Therefore, it does not make sense to say that "the natural insulating value of all insulations is practically the same."

I can only believe the professor meant to say that the insulating value of materials *ordinarily used for insulating houses* is practically the same. Had he said that instead of "all insulations," I should not have taken him to task. But "all insulations" include those used in electric refrigerators where ordinary house insulations are not competent to provide either the desired durability or efficiency.

Actual experience shows that the difference of insulating conductivity between .23 and .35, for example, means a 30 per cent increase in refrigerator operating cost at the start.

Further, since nearly all house insulations are decidedly hygroscopic, this initial 30 per cent will increase considerably as moisture penetrates the insulation. Knowing these things, good refrigerator manufacturers are taking advantage of modern, scientific development of heat insulation, which Professor Kratz did not, apparently, mention.

If the electric refrigeration industry should—as it will not—take the professor's statements as gospel, it would return to sawdust-filled cabinet walls in the manner of the Ice Box Age.

HARVEY B. LINDSAY,
President.

Editor's Note: A copy of Mr. Lindsay's letter was promptly forwarded to Professor Kratz, but because he was away on his vacation, his reply was delayed. Here it is:

College of Engineering
Department of Mechanical Engineering
University of Illinois
Urbana, Ill.
Aug. 24, 1934.

Editor:

I have read Mr. Schaefer's report of my remarks on insulation and while they are extremely sketchy they are substantially correct with the exception of one paragraph. Incomplete transcriptions of remarks are always dangerous, of course, because they record only flat statements without the modifying statements of exceptions and full circumstances. He has compressed too much into the paragraph:

"Due to such factors as film coefficients, insulations with low heat conductivity values may not be as efficient as those with higher values when installed in a wall, according to the speaker."

What I did attempt to show was that due to such factors as film coefficients the ratio of the heat transmission from air to air through two walls having the same thickness of two different insulations was different than the ratio of the conductivities of the insulation themselves. In this case, of course, the better insulation would give the less heat transmission, but not as much less as the ratio of conductivities alone would indicate.

I then went on to show that a greater thickness of a poorer insulation could be installed in the same wall so that it would give less overall heat transmission than a smaller thickness of a better insulation. That is, four inches of an insulation having a conductivity of 0.5 is better than ½-inch of an insulation having a conductivity of 0.3.

I feel sure that I did not leave the impression that owing to film coefficients insulations with low heat conductivity values were not as efficient as those with higher values, which the paragraph that I have shown in quotes seems to leave. I suspect that it is this paragraph that is the basis of Mr. Lindsay's objections.

The whole tenor of my remarks was to stress the fact that insulations should be compared by comparing the overall heat transmissions of the walls as the insulation was actually installed, and not by comparing the conductivity of the insulations.

At the same time, I attempted to show that certain faults in construction and use might offset the advantage that should be gained by the use of an insulation of low conductivity. I at no time meant to give the impression that low conductivity in itself was undesirable.

A. P. KRATZ,
Research professor.

Mrs. Harry L. Hussmann Dies at El Paso

EL PASO, Tex.—Mrs. Harry L. Hussman, wife of the president of Southwest Refrigerators Co., distributor of Hussmann-Ligonier refrigeration products here, died Aug. 7.

Atlanta Still Seeks To Get TVA Power

ATLANTA—Having learned that the city of Atlanta cannot buy cheap TVA power until Norris Dam (near Knoxville) is completed two years hence, Assistant City Attorney Jack C. Savage on Aug. 20 recommended to the city council that two steps be taken immediately to facilitate city power purchases when that time has elapsed.

Steps advised by Mr. Savage, the city's official agent on TVA matters, were that (1) the city council secure from the state legislature a charter amendment making it possible for the municipality to contract for TVA power, and that (2) a survey of the power market here be made as soon as possible to obtain data which will undoubtedly be called for by TVA when power-purchase dealings are being negotiated.

From Alderman Charlie Murphy came the statement that he would introduce resolutions in the council designed to carry out Mr. Savage's recommendations. Mr. Savage pointed out that the council should act as quickly as possible, as Memphis and Chattanooga have already made formal applications for TVA power.

Also planned for introduction in council by Mr. Murphy is another resolution instructing the city attorney to prepare for submission to Georgia voters a constitutional amendment permitting cities to issue bonds above the present constitutional limit for construction or purchase of public utilities, and providing that such bonds shall constitute a lien only on the utility concerned and not on other property.

Atlanta's City Electrician Dewey L. Johnson estimates the total annual saving to Atlanta domestic and commercial consumers at $2,994,960 if TVA rates were compared with Georgia Power Co.'s regular rates, or $2,254,560 as compared with Georgia Power's special inducement rates.

Kelvinator to Advertise Air Cooling in Winter

(Concluded from Page 1, Column 3)

most of the space, emphasizing commercial air-conditioning installations.

"Although air conditioning in its complete sense includes heating, refrigeration, and proper humidification," said V. C. Woodcox, Kelvinator advertising director, in commenting on his firm's advertising schedules, "the greater part of the public's growing interest still lies in controlling summer atmospheric conditions.

"Considering the present state of interest in this division of the air-conditioning field, it is evident that an 'educational' rather than a strictly 'sales' approach is necessary, and that this can be profitably carried on during the autumn and winter, with the 'sales' copy coming later."

The recollection of trade losses caused business men by this summer's unprecedented heat will provide a valuable wedge in the campaign, Mr. Woodcox thinks.

The copy, therefore, will emphasize such points as the economic advisability of including air conditioning in 1935 budgets, the advances the product has made since leaving the experimental stage, the improbability of rapid obsolescence, and the proper procedure in choosing equipment to meet varying needs.

The present Kelvinator line of conditioners includes 24 models, available in the floor-type, self-contained, and suspended form of unit.

Kelvinator Men to See Series If Tigers Win

DETROIT—R. I. Petrie, domestic sales manager of Kelvinator Corp. has reserved 50 rooms at the Book-Cadillac hotel to be used by the company's district managers when they are brought here as guests to attend the World's Series—providing the Detroit Tigers win the American League pennant.

Suggestions to Advertisers

Features of Coming Issues of Electric Refrigeration News

Sept. 5—Orphan Machines

Editorial: Revised list of orphan electric refrigerators with all available information regarding each defunct concern, and the disposition of its patents, patterns, stock of parts, etc.

Advertising: *Dramatic background for well-established refrigerator manufacturers to impress the industry with the value of their stability. A rare opportunity for specialists in replacement parts to list the brands and models which they are prepared to service. Advertising forms close Sept. 1.*

Sept. 12—Commercial Specifications

Editorial: Complete specifications on all compressors for commercial refrigeration appliances including new machines brought out since the publication of last set of commercial machine specifications in March 14 issue of ELECTRIC REFRIGERATION NEWS.

Advertising: *Of unusual interest and value to every manufacturer, distributor, dealer and salesman of commercial refrigeration. There will be a big demand for extra copies. This issue will have the more than usual advertising value to any manufacturer interested in the commercial refrigeration market. Advertising forms close Sept. 8.*

Sept. 19—Inside the Refrigerator

Editorial: A pictorial display showing the inside of the leading designs of refrigerator cabinets now on the market, with captions emphasizing differences in arrangement and fittings. An article will discuss the art of interior decorating as applied to refrigerator cabinets.

Advertising: *A particularly fine background for the advertising of refrigeration accessories, such as shelving, egg or fruit baskets, vegetable fresheners, food dishes, water bottles, odor absorbers, ice cube trays, ice cream freezers, lighting fixtures, ice cube crushers, thermometers, etc. Advertising forms close Sept. 15.*

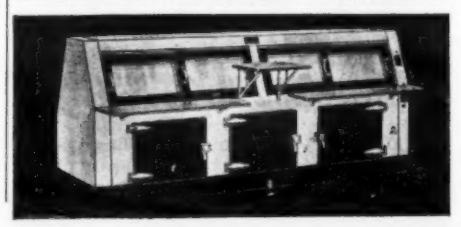
Sept. 26—Air Conditioning

Editorial: More how-to-do-it factual stories about actual installations. Results of tests. New humidifying equipment for winter use.

Advertising: *Another opportunity for manufacturers of air-conditioning equipment to broadcast a sales message in an atmosphere of interesting editorial information on the subject.*

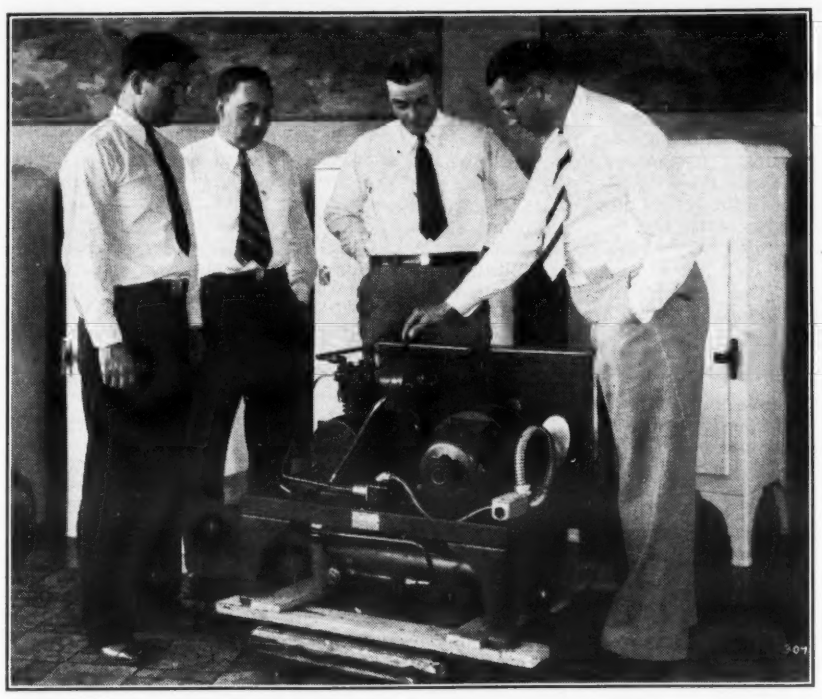
Oct. 3—Department Store Merchandising

ACE HARD RUBBER
Hinged and Sliding
REFRIGERATOR DOORS
Door Frames, Slide Rails, Jambs, Glazing Strips, etc. Standard and special sizes.
Send for catalogue and prices
AMERICAN HARD RUBBER COMPANY
11 Mercer Street, New York, N. Y.
Akron, Ohio—111 West Washington Street, Chicago, Ill.



COMMERCIAL REFRIGERATION

Schooldays Are Here



Left to right: Gene Reid, supervisor, Westinghouse southwestern division; Willis Marshall, vice president, Intermountain Appliance Co., Denver; and Tom F. Savage, Jr., president, Intermountain Appliance Co., watch E. H. Culver, who is conducting schools on commercial refrigeration.

Mechanical Units Used in Ice House

WEST PALM BEACH, Fla.—Mechanically cooled ice is more than a novelty—it is a business necessity for the ice man in Florida, according to John H. Couse, local dealer, who recently equipped the ice storage house in Clewiston with Kelvinator refrigeration.

In spite of unusually heavy insulation, the storage room of the Clewiston ice house averaged $10 a day in ice meltage loss. The problem was solved by the installing of six Kelvinator cooling units and six thermostatic expansion valves, connected to a 1½-hp. methyl chloride condensing unit with thermostatic control. This equipment provides a temperature of 28° F. at a cost of about $1.50 a day.

Instantaneous Coolers Aid Beer Tavern Sales

CHICAGO—John Mandis, owner of the Belford Tavern at Belmont and Crawford Aves. here, reports that sale of beer in his tavern has been boosted to 22 barrels a day since the installation of two Radial Dual Control beer coolers, manufactured by Commercial Coil & Refrigeration Co. of this city.

Each beer-cooling unit serves two beer taps and one water tap and each unit has a capacity of 30 gal. per hour.

The beer is not precooled, the entire refrigerated duty falling upon the two draft station coolers.

Refrigeration is supplied by a 1½-hp. Servel commercial refrigerating machine.

The Radial Dual Control beer coolers also provide foam control, in addition to cooling the beer.

Fogel Refrigerator Co. Adds to Factory

PHILADELPHIA—Extensive alterations and additions to the factory of the Fogel Refrigerator Co., display case manufacturer here, have just been completed. The construction work was occasioned by a volume of display case orders this year larger than could be handled with existing production facilities, according to William Fogel, sales manager.

Manufacturing space has been increased by 10,000 sq. ft., and a 2,000-sq. ft. display room has been built onto the main factory building.

Westinghouse Holds Commercial Schools

MANSFIELD—E. H. Culver, Westinghouse commercial refrigeration representative, and Gene Reid, refrigerator supervisor, recently conducted schools on the installation and application of commercial refrigeration units for dealers and salesmen in Wichita, Denver, and Kansas City.

Additional schools will be held at the Foster Co. in St. Louis; Fones Brothers Co. in Little Rock; Westinghouse Electric Supply Co. at Oklahoma City; and the Westinghouse Electric Supply Co. at Dallas. Outlets in other cities will have similar schools when the present series is completed.

Minneapolis-Honeywell Issues Book on Controls

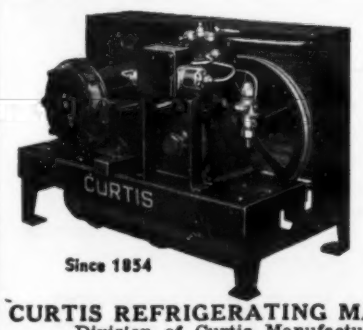
MINNEAPOLIS—Quite neatly combining a presentation of its own products' features with a technical discussion of commercial refrigeration controls in general, Minneapolis-Honeywell Regulator Co. here has issued a 31-page booklet for engineers titled "The Three R's of Refrigeration Control."

Divided into three sections, the booklet first treats the subject of range, then ready adjustment, and finally reliability. Each discussion opens with general information and comment on what features give a commercial control a specific attribute.

Telephone Co. Contracts For Water Coolers

MINNEAPOLIS—With Kelvinator equipment already in use in the employees' cafeteria in its new 28-story office building here, Northwestern Bell Telephone Co. has just contracted for a second Kelvinator installation, to cool drinking water for the bubblers throughout the building.

The apparatus will include two E-105 Day-and-Night coolers operated by a Kelvinator 3-hp. condensing unit. Approximately 1,000 ft. of 1-in. and another 1,000 ft. of 1¼-in. insulated lines will be used in the fountain system, which will refrigerate 600 gal. daily, in addition to cooling drinking water for 700 customers daily.



CURTIS REFRIGERATION

Quiet, Compact, Slow Speed Condensing Units. Complete range of sizes for commercial and domestic applications. 1/6 h.p. to 5 h.p. Distributor Franchises still available. NRA CODE

Since 1854

Write to

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue, St. Louis, U.S.A. 518 H. Hudson Terminal, New York City.

Famed Dairy Farms Install 'Flowing Cold' Milk Cooling Units

MILWAUKEE—Two widely known Wisconsin dairy farms have been equipped with the new Frigidaire "flowing cold" milk-cooling unit and the owners are now in the classification of producers entitled to extra payment for super quality milk.

The farm of Ambrose Wiedmeyer, near West Bend, Wis., was equipped by Carl Gruetzmacher, refrigeration manager for the West Bend Hardware Co.

That of Robert C. Eby, Madison, Wis., known as Quarry Hill dairy farm, was outfitted by Henry E. Hefty of the Hefty Sales Co., Madison.

Mr. Wiedmeyer, commenting on the reasons why he went to the expense of improving his milk-cooling facilities at this time, said:

"It became necessary two months ago for me to improve the facilities for refrigerating the milk produced on my farm. I selected an eight-can Frigidaire wet type storage system and a ¾-hp. Frigidaire compressor.

"We produce 10 cans of milk a day from our Guernsey herd and market through the Golden Guernsey Cooperative, shipping into Milwaukee by truck. The Frigidaire milk cooler holds nine cans and since we use one can for our home, the installation is ample to provide all the refrigeration we need.

"It is only 45 minutes from the time we finish milking until the milk in the cans is pulled down to 45° F. It remains at this temperature until the route truck picks up the cans for transport to Milwaukee and the milk arrives there below the 50° F. required.

"Last summer, with old fashioned means of cooling our milk, we failed to get the premium of 15 cents a hundredweight paid for bacteria counts below 50,000. In the test of our milk last week in Milwaukee right at the time of the abnormally high temperatures that ranged well above 100° F., our count was 2,800. This means that we will collect as premium approximately $27 a month extra income."

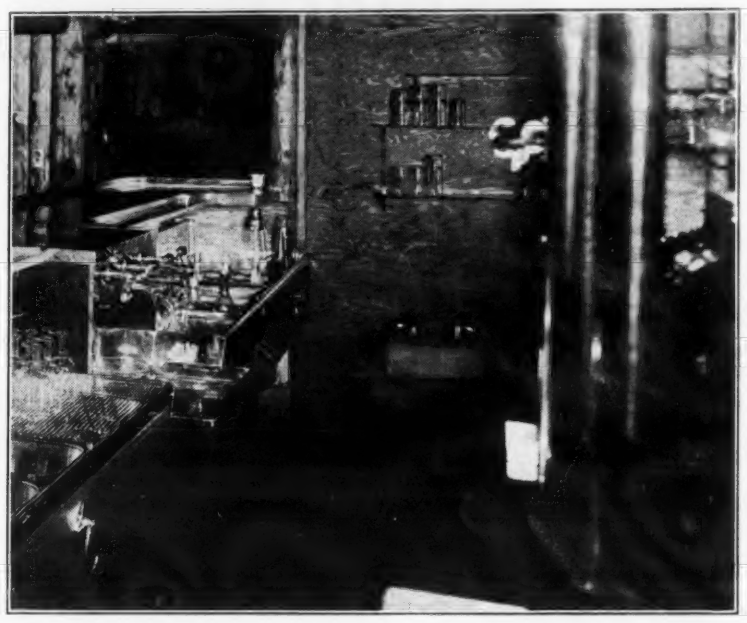
Mr. Eby, looked upon by Madison milk distributing companies as one of the outstanding producers in a famous dairy state, said:

"After 10 years as a milk producer, I decided to improve the facilities for cooling the milk and installed a 'flowing cold' milk cooler with a capacity of seven cans.

"From the high bacteria counts we had been registering pulled the count down to 3.100. We are one of six dairies supplying selected Guernsey milk to the Kennedy Dairy Co. in Madison, a Borden property, and the premiums paid us for our low bacteria count will more than make up the cost and operating expense of the equipment.

"Where we used to bring the milk down to 60° F. with well water in many hours, with the new cooler, we bring it down to 50° F. in an hour."

New Cooler in Rustic Setting



Note the manner in which the G-E-Russ cooling cabinet fits into the bar of the Necho Allen hotel taproom in Pottsville, Pa.

WHY LK CORKBOARD IS THE *Choice*
FOR OUTSTANDING ICE CREAM EQUIPMENT

RIGHT — *Anheuser-Busch, Inc., of St. Louis, insulates this 12-hole ice cream cabinet with LK Corkboard.*

BELOW—*C. Nelson Manufacturing Co., of St. Louis, uses LK Corkboard Insulation in this, and other items of its equipment line.*

ABOVE—*Russ Soda Fountain Co., of Cleveland, standardizes on LK Corkboard Insulation for its Russ Rapid Freezer System.*

LEFT—*C. V. Hill & Co., of Trenton, N. J., manufactures this counter ice cream freezer which is insulated with LK Corkboard.*

NOW as never before, PERFORMANCE takes the spotlight when interested buyers gather around. Whether they're in the market for ice cream equipment or for any other kind of commercial refrigerators the story is the same. Appearance and low initial cost are still important—but the foremost consideration is that of *continued* efficiency and operating economy.

For users of good insulation, this demand for the "cold facts" has a definite sales advantage. By standardizing on Armstrong's LK Corkboard, leading ice cream equipment manufacturers are giving their salesmen the strongest kind of testimony to the dependable performance and low operating cost of their cabinets and display cases. Prospects *know* corkboard's 30-year record as standard insulation in the ice and cold storage industry. And the fact that LK Corkboard is made by Armstrong gives definite assurance of highest quality.

Especially developed to meet the particular requirements of refrigerated equipment, LK Corkboard is *extra* efficient and *extra* light in weight. It is moisture resistant and rigid . . . can't settle or pack. It will pay you to investigate LK Corkboard before placing your next insulation order. Armstrong engineers will be glad to consult with you. No obligation. For details and samples of LK Corkboard, write Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.

Armstrong's LK CORKBOARD

SERVICE

How to Locate Service Troubles On ElectrICE Refrigerators

Second Installment to the Belding-Hall Gear Machine Giving Adjustments & Remedies for Common Complaints

ADJUSTMENTS, instructions for removing and installing various parts, and analyses of common service complaints on the ElectrICE household refrigerator are given in this issue of the NEWS—supplementing the description of its operating cycle, and methods of performing such operations as charging, discharging, purging, reading pressures, locating leaks, etc. which were published last week.

Last week's instalment included a chart of the ElectrICE operating cycle, specifications of self-contained models, and drawings of its cooling unit and service manifold. To get the complete story of servicing the ElectrICE, refer to pages 15 and 17 of last week's issue of the NEWS, Aug. 22, as a number of references are made in this article to valves and connections numbered in Figs. 1 and 2 of last week's article.

Adjusting the Automatic Control

The automatic control should be set to give a refrigerator temperature of approximately 42° to 50° F.

In taking refrigerator temperatures, use an accurate thermometer. Examine the entire system thoroughly, and make sure that the cause for the varying temperatures does not exist elsewhere, before attempting to adjust the automatic control.

If the refrigerator temperatures are too low (below 42° F.), adjust the control to cut in and out at a lower temperature.

This is accomplished by turning up the main adjusting cap "E" in Fig. 5, thereby lengthening the spring "D."

When installing the control, place a small spirit level on top of its case and see that it sets perfectly level. This is necessary for satisfactory operation. The control positively will not operate when placed upside down. The small gas bulb tube and rubber cable enter the control case at the bottom, as shown in the diagram of electrical parts last week (Fig. 4 on page 17).

Changing Units or Parts

To change the cooling unit, remove porcelain baffle and ice trays from the cooling element. Close the gas and liquid line shut-off valves numbered 2 and 3 at the service manifold (see Fig. 1 in last week's article). Remove service outlet cap No. 8 from double valve at bottom of cooling element, and attach the discharging tube to the service outlet.

Follow instructions "Discharging Sulphur Dioxide from the System" on page 15 of last week's issue. When all the sulphur dioxide has drained off, close the three shut-off valves on the cooling element, Nos. 6, 7, and 9.

Detach the liquid and gas lines fastened to shut-off valves on cooling element. Remove the automatic control bulb and clip at lower side of cooling element. Remove the bolts fastening the cooling element to hanger strap and side brace. Remove the cooling element and replace with one correctly charged with refrigerant.

Replace the automatic control bulb and clip at lower side of cooling element. Purge the gas and liquid line and then attach them to their respective shut-off valves on the newly installed cooling element. Then open the gas and liquid line shut-off valves Nos. 6 and 9 on the cooling element and at the service manifold Nos. 2 and 3. Check the system carefully for leaks before replacing the porcelain baffle on the cooling element. The system is now ready for operation.

Compressor Gear Assembly

Close the gas and liquid line shut-off valves at the service manifold Nos. 2 and 3. Remove the service outlet cap No. 1 at the service manifold, and attach the discharging tube to the service outlet.

Follow the instructions "Discharging Sulphur Dioxide from the System" in the last issue of the NEWS. Open the liquid and gas line service outlet shut-off valves Nos. 4 and 5, and when all the sulphur dioxide has drained off, remove the discharging tube and close the liquid and gas line service outlet shut-off valves Nos. 4 and 5.

If you are not equipped with a portable vacuum pump, replace the compressor with one which has a holding charge of sulphur dioxide. To do this, detach the high pressure gas line at the discharge valve No. 10 (Fig. 1 of last week) on top of the compressor housing and the suction line near the compressor drive shaft.

Remove the complete compressor assembly from the base and replace. Purge out the high pressure and the suction gas lines and attach to the other compressor.

Open the gas and liquid line shut-off valves Nos. 2 and 3, and check the system carefully for leaks. The system is now ready for operation.

Using a Vacuum Pump

If you are equipped with a portable vacuum pump, proceed as follows: Detach the suction line near the compressor drive shaft, and remove the motor from the condensing unit base. Remove the compressor gear assembly. Clean the gasket flange carefully and put on a new gasket.

Replace the defective compressor gear assembly with a good one. Transfer the flexible coupling collar from the old drive shaft to the good one. When the new compressor gear assembly is installed and the bolts tightened, attach the vacuum pump suction tube to the service outlet No. 1 at the service manifold and open the liquid and gas line service outlet shut-off valves Nos. 4 and 5.

Start the vacuum pump and draw as high a vacuum as possible for approximately 30 minutes.

Close the liquid and gas line service outlet shut-off valves Nos. 4 and 5 and detach the vacuum pump suction line. Replace the service outlet cap No. 1, and open the gas and liquid line shut-off valves Nos. 2 and 3. Then check the system carefully for leaks.

Mount the motor back on the condensing unit base, and line up the motor and compressor shaft carefully so as to get the least possible noise. The system is now ready for operation.

If the complete compressor assembly is removed and repaired in the service shop, it should be thoroughly dehydrated by heating it in an oven at 200° F. and drawing as high a vacuum as possible on the unit while drying. This will require three or four hours.

Oil Seal

If the compressor drive shaft oil seal passes much oil or gas, proceed as follows: Discharge the gas from the system as mentioned under "Changing the Compressor." When the gas is drained off, remove the motor from the base. Then remove the flexible coupling collar from the compressor drive shaft, and remove the oil seal retainer gland.

Remove the oil seal assembly, which consists of two hardened and ground collars, two rubber washers, two steel washers, and one spring. These may be pulled out with a small wire hook.

Examine the seal faces of the hardened collar and the oil seal retainer gland, for grooves, cuts, or corroded spots. If the seal faces show any of the above defects, repair the parts.

When replacing the oil seal assembly, be sure that the hardened collar, with the milled slots across the ground face, bears against the ground face at the rear of the oil seal chamber.

After assembling the oil seal on the shaft and inserting it into the seal chamber, replace copper gasket and oil seal retainer gland.

Before drawing the oil seal retainer gland up tightly, open the gas and liquid line shut-off valves Nos. 2 and 3 at the service manifold, and purge the oil seal chamber out with oil, then draw the gland up tight.

Replace the flexible coupling collar on the compressor shaft. Mount the motor back on the base, taking care that it lines up properly with the compressor shaft. The unit is now ready for operation.

Float Valve

Remove porcelain baffle from the cooling element. Close the liquid supply line shut-off valve No. 6 (Fig. 2 of last week's issue) at bottom of cooling element. Remove the service outlet cap No. 8 from double valve at bottom of cooling element. Attach discharging tube to service outlet No. 8. Close liquid line shut-off valve No. 3 at service manifold.

Open the service outlet shut-off valve No. 7 at bottom of cooling element and drain off gas as mentioned last week under "Discharging Sulphur Dioxide from the System."

When the gas is discharged, close the service outlet shut-off valve No. 7 at bottom of cooling element. Detach discharging tube and replace service outlet cap No. 8, and detach the liquid line from the float valve head assembly. Remove the float valve head assembly from the housing. Then clean the gasket flange on the housing and put on a new gasket.

Assemble new float valve head assembly to the housing. Purge the liquid line and attach to the new float valve head assembly, and purge the air from the float valve housing. Open liquid supply line shut-off valve No. 6 at bottom of cooling element, and open liquid line shut-off valve No. 3 at service manifold. Check the system carefully for leaks. The system is now ready for operation.

Automatic Control

Remove porcelain baffle from cooling element. Slip the old automatic control gas bulb out of clip at bottom of cooling element. Pull bulb out of refrigerator through installation line tube at back, or down through installation line tube through bottom of the refrigerator, as the case may be.

Remove cover from junction box and disconnect automatic control cable end. Pull automatic control cable out of junction box. Remove automatic control from instrument board and replace with a good control. Push end of new control cable into junction box and make connection as shown in diagram No. 5.

Push new control gas bulb through installation line tube into refrigerator and into holding clip at bottom of cooling element. Replace porcelain baffle, and check cut in and cut out temperature of new control to insure satisfactory operation of system.

Causes of Motors Failing to Start

Examine the automatic control. The mercury tube should be tilted so that the quantity of mercury in the tube floods the two electrodes. Examine the fuses in the junction box, and the motor and wiring for loose connections.

The following causes will prevent the armature from turning:

1. An extremely tight or corroded compressor.
2. Burnt bearings.
3. An extremely worn bearing or sprung motor shaft, this causing armature to strike field iron.
4. Misalignment between compressor and motor.

Examine the brushes and holders. The brushes should touch the armature. Excessive dirt, a loose spring or extreme wear, will prevent them from making contact with the armature.

If the motor has a short circuiting device, it should bear against the ends of the commutator bars. A loose spring or excessive dirt will prevent this device from operating properly.

Examine the motor for short circuits as follows: Raise the brushes free of the commutator and turn on the current. If the motor becomes very hot in a short time, this will indicate a short circuit in the field windings. While the brushes are still free of the commutator, rotate the armature slowly; if it tends to stick and then jumps as it rotates, this will indicate a short circuit in the armature windings.

In direct current motors, the brushes bear continually against the armature. The armature should be smooth, bright, and free from pitting, dirt, or oil. High mica between copper segments will prevent contact of brushes.

Causes for Noisy Motor

Badly worn bearings.

Excessive end play.

Improper alignment between motor and compressor.

An electric hum. (This is permanent in the motor, due to the design or manufacturing variations.)

Any minor repair or adjustment should be taken care of by the service man. Any major repair, such as rewinding the motor, should be taken care of by a motor specialist or it should be returned to the motor manufacturer.

Thermostat

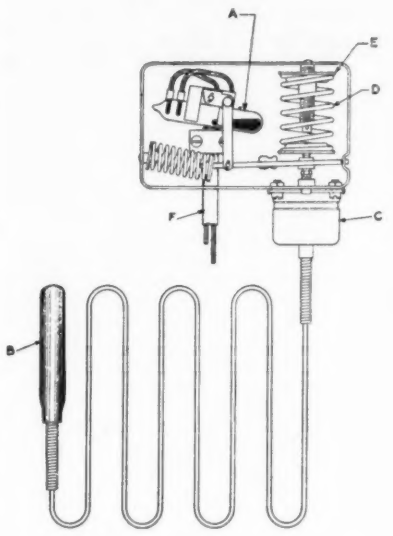


Fig. 5—ElectrICE thermostat. A—Mercury switch. B—Thermostatic bulb (gas filled). C—Power element (encased metallic bellows). D—Main adjusting spring. E—Main adjusting cap. F—Rubber cable containing leads.

Service Troubles

Box Too Cold

1. Automatic control out of adjustment. See instruction for "Adjusting Automatic Control."
2. Automatic control will not cut out. Control is not level. Parts binding or sprung out of proper shape.

Box Too Warm

1. Automatic control out of adjustment. See instructions for "Adjusting the Automatic Control."
2. Improper air circulation in the refrigerator. Provisions blocking the air flues. Re-arrange the provisions.
3. Too much heat leakage at the doors. Hardware on the doors loose. Tighten screws in the hardware. The door must fit tightly against the gasket on refrigerator.
4. Insulation of the refrigerator insufficient. The system requires a better insulated refrigerator.
5. Too much frost on the cooling element. See instructions for "Adjusting the Automatic Control."
6. Refrigerator too near a radiator or stove.
7. Condensing unit not operating properly.

a. Gas line frosting back to the compressor. Too much sulphur dioxide in the system. See instructions for "Discharging Sulphur Dioxide from the System."

Float valve stuck wide open. Examine the float valve. See instructions for "Changing the Float Valve."

b. Liquid line frosting up to the cooling element. Leak in the special restricted tubing. Change the special tubing. See instructions for "Changing the Float Valve."

Float valve leaking slightly. Examine the float valve.

c. Sulphur dioxide low in the cooling element. See instructions for "Adding Sulphur Dioxide to the System."

d. Motor not running up to rated speed. Check service line voltage.

e. Compressor not efficient. Indicated by very low head pressures. See instructions for "Changing the Compressor Gear Assembly."

f. Head pressure too high. See instructions for "Purging Permanent Gases from the System."

Unit Will Not Operate

1. Compressor stuck with corrosion. See instructions for "Changing the Compressor Gear Assembly."
2. Examine the motor.

Gas Leaks

1. Flare tube joints loose.
2. Threads on the fittings stripped. Will not draw up tight.
3. Copper tubing split at flared joints. See instructions for "Making Flared Tube Joints."
4. Litharge porous, softened or cracked at pipe thread joints. Remove fittings and use a new application of a heavy litharge paste at joints.
5. Casting porous. Small pin holes can be hammered closed with a ball peen machinists' hammer. If leaks are too large, replace parts.
6. Gaskets torn or too soft.
7. Flanged gasket joints loose.

If oil is leaking excessively at the oil seal on the drive shaft, it may be that the lapped faces of the hardened, ground, steel collar and oil seal gland retainer are damaged. See instructions for "Changing the Compressor Oil Seal."

Corrosion

When sulphur dioxide comes in contact with moisture, sulphurous acid is formed. This is corrosive acid which will react chemically with all the metals used in the refrigerating system. If its action is not arrested immediately, it will cause disastrous results to the refrigerating equipment.

Parts attacked by sulphurous acid should be immediately cleaned of the corrosion that has formed, thoroughly dried and oiled before reassembling.

There is only one way to prevent sulphurous acid forming in the system. The inside of the entire refrigerating system must be kept absolutely dry. Bear in mind that nearly all air, that may happen to enter the system, contains a slight percentage of moisture.

When servicing a system and there is an occasion to break a flanged joint, always clean the gasket surface thoroughly and put on a new gasket slightly oiled with refrigeration oil.

How to Service Other 'Orphans'

This article is one of a series published by Electric Refrigeration News to give the service man help in servicing various makes of machines. Most of the makes described to date have been "orphan" machines on which service information is no longer readily available.

Service instructions on the following makes were published in these issues:

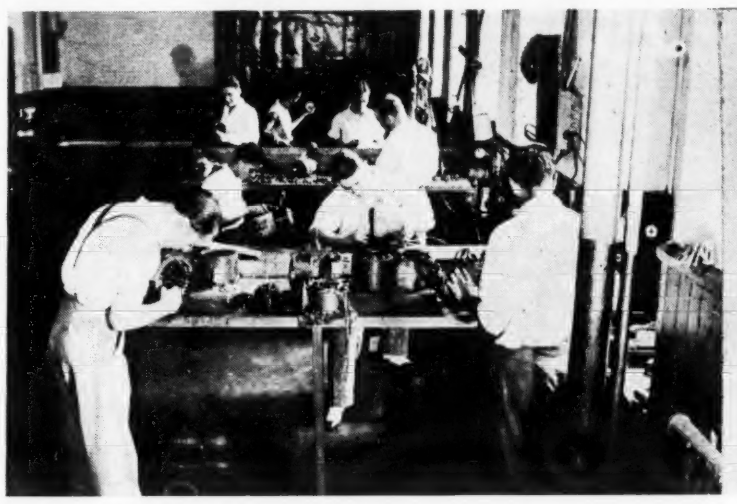
Absopure household	March 25, 1931
Majestic hermetic	Aug. 16, 1933
Allison	May 30 & June 6, 1934
Welsbach	June 13, 20, & 27, 1934
Rice household	July 4, 1934
Wayne household	July 11, 1934
Absopure commercial	July 18, 25, & Aug. 1, 1934
Iceberg	Aug. 8, 1934
U. S. Hermetic	Aug. 15, 1934
ElectrICE	Aug. 22 & 29, 1934

McCORD
REFRIGERATION
PRODUCTS
◇
COMMERCIAL EVAPORATORS
◆
DOMESTIC EVAPORATORS
◆
CONDENSERS
◆
METLFLEX ICE TRAYS
◆
SPIRAL FINNED TUBING
◆
SPIRAL COPPER FINNED IRON, STEEL OR COPPER PIPE
◇
McCORD RADIATOR & MFG. CO.
DETROIT, MICH.

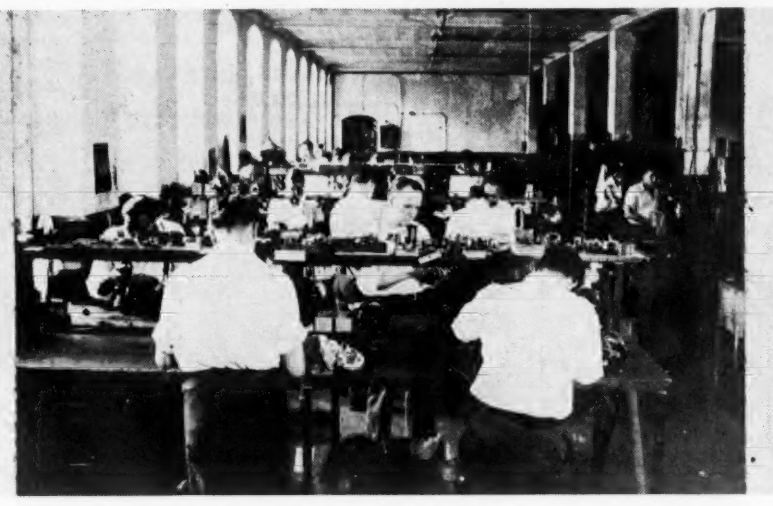
VIRGINIA SMELTING Company
WEST NORFOLK, VIRGINIA
76 BEAVER ST., N.Y. - 131 STATE ST., BOSTON
Extra Dry
ESOTOO
LIQUID SULPHUR DIOXIDE
V-METH-L
METHYL CHLORIDE

KRAMER
COMMERCIAL
EVAPORATORS
are all copper hot tinned construction, or copper fin steel tube for ammonia systems. Also all steel hot galvanized for ammonia. Made in all fin sizes—various fin spacings—to any over all dimensions, and to required capacities.
Send for KRAMER Refrigeration Catalogs
TRENTON AUTO RADIATOR WORKS
210-212 West 65th, N.Y.C. TRENTON, N. J. 5114 Liberty Ave., Pittsburgh, Pa.

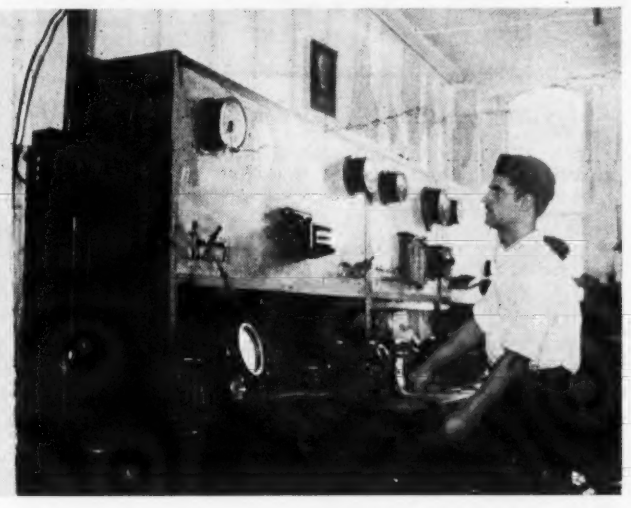
Three Steps in Rebuilding and Testing a Refrigerator Motor



Winding department—Armatures and stators are wound here, after having been entirely stripped of old windings and old paint.



Motors undergoing repairs and finishing touches in the shop of the Electric Refrigeration Motor Co., Philadelphia.



Hydraulic brake test in which motors are given the final break-down test, after repairs have been completed.

SERVICE

Tatem Lists Motor Work that Can Be Done in Field

Proper Fusing of Motor Important; Service Men Should Check Bearings for Wear

By George C. Tatem
President, Electric Refrigeration Motor Co., Philadelphia

IT has been quite interesting to note the foothold which service as a whole has taken in industries during the past several years. We believe that most of us can recall the "Hey-day" of more prosperous years when service was looked upon with a frown and sales the thing of the hour. Today service has most assuredly come into its own, and service men, that is good service men regardless of what field they may be in, are certainly at a premium.

Sales managers and executives the world over now appreciate the fact that it is the service behind their product which is putting their own particular article over, rather than the high-pressure sales methods which were used during the years of 1928 and 1929.

And what industry needs efficient service more than the refrigeration business as a whole. The very life of the manufacturers depend largely today upon the prompt and efficient service its organization is in a position to render.

It has been our business to be directly connected with the refrigeration industry in servicing and handling refrigeration motors. An electric refrigeration motor is a unit which is rather difficult to service in the field, repairs and adjustments being by nature restricted to minor ailments.

We are of the opinion that with some exceptions, the average service man does not have sufficient knowledge of either electricity or a motor to attempt major adjustments without removing the unit. In this category we refer to such things as governors, brushholders, short-circuiting devices, etc.

We are therefore going to outline adjustments which it is possible to make in the field without removing the motor to a repair shop, as well as outline later in this resume the care which should be executed in selecting a motor repair shop to handle repair work which is beyond attention in the field:

Service Hints

1. One point which should be brought out most emphatically is the importance of properly fusing a motor after it is installed. Universally done, this will be a big help to the industry in bringing about lower maintenance service costs.

Neglect in fusing a motor, without a doubt, does amount to many dollars in service over a period of one year.

It is usually recommended that a fuse not exceeding 50 per cent of the nameplate reading be used, as an illustration: a motor rated at 4 amperes, 110 volt, would be properly fused using a 6 ampere fuse.

Anything over this endangers the motor, and a great deal of major motor problems would be eliminated if service men would remember that a properly rated fuse, even though it may mean an additional service call, would decrease the maintenance cost of the firm with whom he may be connected.

2. We strongly recommend to all service managers that they furnish their men with an ammeter, and that this unit be carried at all times in their service kit. This would increase the efficiency of service in the field, inasmuch as it would enable the service man to give a motor a quick test.

The test of amperes should be given while the motor is idling (belt disconnected). If the ampere reading shows same or less than nameplate reading, the motor itself is o.k., the belt should then be attached and a reading taken while the unit is in operation.

An additional current reading above 25 per cent over the nameplate reading would indicate an overload (this same condition could be detected by a decrease in r.p.m.'s), and the trouble should be looked for in the refrigeration system. Overloading is the source of a large percentage of motor troubles.

Eliminating Radio Interference

3. A great deal of radio interference and other noise can be eliminated if a motor is properly grounded. This likewise lessens the danger of anyone being shocked.

4. The majority of service men today can readily detect bearing wear, and when servicing a refrigerator this should be one thing to receive his immediate attention, inasmuch as a badly worn bearing will permit the armature to drag against the laminations of the stator and will also cause the consumption of more electric current.

5. Practically all service men today replace brushes in the field. This in some respects has been a bone of contention, due to the fact that the brushes have not been properly seated, and we strongly recommend that a brush seater stone be used after new brushes are installed, and that the brushes be properly seated before leaving the job.

Get Motor Up to Speed

6. If the motor does not come up to speed on the start, take your watch and time the motor, counting the number of seconds it takes for the unit on repulsion. Then mark the brush-holder setting, move the brush-holder about ⅛ in. against rotation, and check motor again to see if you have caused it to gain speed.

If not, move the brush-holder ⅛ in. from original brush-holder setting in direction of rotation and check again. If any speed is gathered, check temperature of motor for heating up, and if it is found to be above 180° F. and you are sure the compressor is o.k., there is a possibility that either the armature or the stator is shorted or that the bearings are worn.

Testing Shorted Armature

7. A very exact test in determining whether or not an armature is shorted is to turn off the switch and lift the brushes off the commutator, then turn on the switch and continue to hold brushes off commutator with left hand, and revolve armature with right hand.

If armature will not turn, or has a tendency to lock, it is shorted. If the armature is not shorted it will revolve very freely.

8. If excessive brush wear is experienced, check armature for an open circuit. This is readily determined by a close examination of the commutator; where you may find that the insulation or mica between the segments of a few commutator bars is charred, discolored, or black.

9. It has been a common practice for some service men to use a file and endeavor to file the face of the commutator while the motor is in the field. This, we believe to be a very poor practice and very costly, as it is never done properly.

10. It is most advisable to use a standard grade of medium automobile oil or special oil which is made expressly for use in refrigeration motors.

Motor Repair Shops

Many executives have looked upon motor repair work much the same as the most of us do upon a second-hand automobile. We quite strongly disagree with this theory and contend that a motor repair shop properly equipped and managed can service and repair a motor, and put it in practically the same condition as it was when purchased new. This particularly applies to motors that are completely burned out, and where a saving of approximately 35 to 45 per cent is involved, we believe that it becomes quite an item in decreasing service costs.

There is one practice which a service man should strictly adhere to, and that is, in no case when having a motor repaired permit the repair shop to cut out one coil or to attempt to make repairs to a coil when the insulation has been more or less burned.

It is likewise an important factor that the windings be properly dipped in a varnish which is specially prepared for this purpose.

As an illustration: it is necessary that the windings be dehydrated thoroughly by heating in an oven at a temperature of approximately 250° F. The unit is then submerged into a dipping tank of Hygrade insulation varnish.

Of course, the unit is dipped into the cold varnish while it is hot and the tendency is for the varnish to be drawn to the hot copper. This causes the varnish to penetrate the very center of each coil and every slot. After baking several hours the unit is again dipped and baked. The number of hours of baking needed depends upon the size or horsepower of the motor.

In the final analysis, the health of the refrigeration industry depends largely upon the kind and type of service which is rendered by the individual service man, and it behooves each and every one directly connected with service to give a little more attention to the electric motor if service calls and likewise their service expenses are to be decreased.

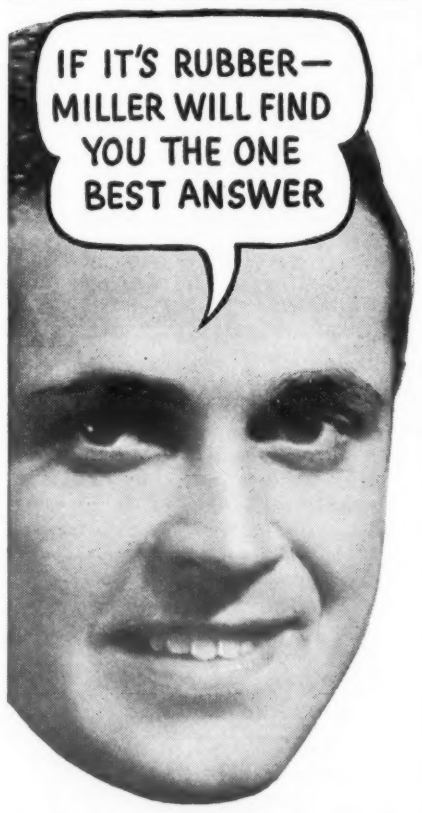
Autographic Register for Use by Service Men Introduced

DAYTON—Adapted particularly for recording service calls and repairs, making delivery tickets, charge orders, and other records used by refrigeration dealers, a new autographic register is being introduced by the Standard Register Co. here. It is no larger than an ordinary sales pad.

Named the "Aristocrat" model, the register weighs but a fraction over a pound when loaded with 150 forms, and can be carried in a pocket. Made of duraluminum, it is designed for use where sales pads are now used and where the conventional type autographic register is too large.

It will be available in 10 form sizes and two depths, the smaller one accommodating 150 forms while the master model will handle 300 forms at one loading.

A handy filing drawer is optional equipment on all models.

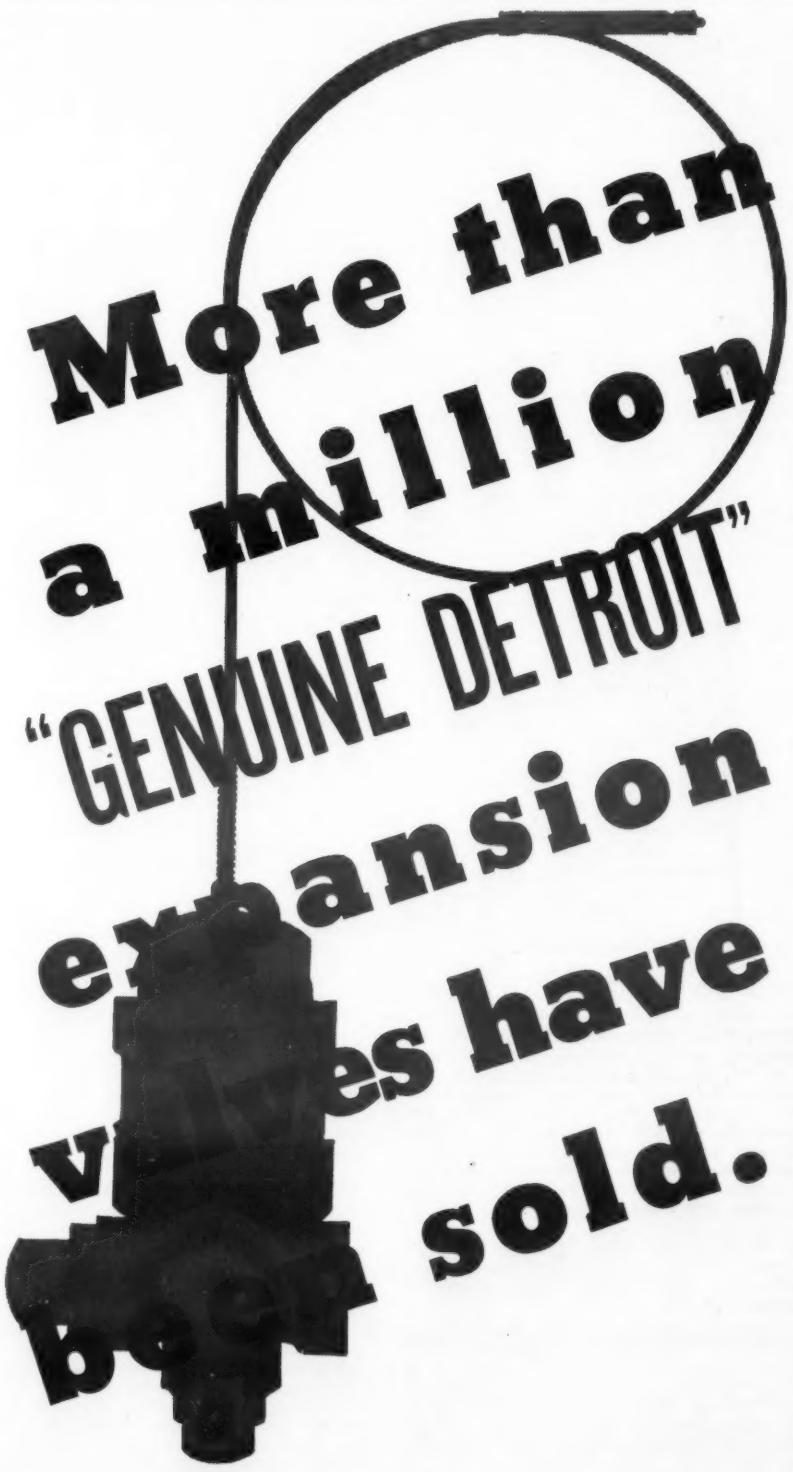


Special Service on
SPONGE
RUBBER PARTS

TEN years of close cooperation have made Miller's technical staff part of the electric refrigeration industry. We know your problems. We have helped solve many of them. Sponge rubber, for instance. Improvements developed by Miller are performing valuable service for leading manufacturers, in new uses of sponge rubber. Our consulting service is yours for the asking. Just write Miller Rubber Products Co., Inc., Akron, Ohio.

OUR EXPERIENCE WILL SAVE YOU TIME AND MONEY

Miller



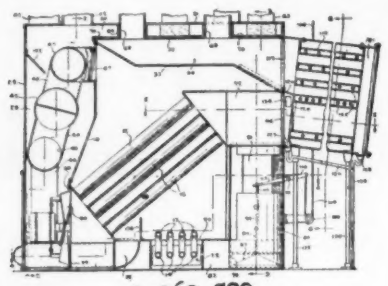
DETROIT LUBRICATOR COMPANY
DETROIT, MICH., U. S. A.
Canadian Representative: Railway and Engineering Specialties, Ltd., Montreal, Toronto and Winnipeg

PATENTS

Issued Aug. 14, 1934

1,969,829. AIR CONDITIONING MEANS. Frank A. Whiteley, Minneapolis, Minn. Application July 9, 1930. Serial No. 466,689. Renewed Dec. 13, 1933. 18 Claims. (Cl. 257—9.)

1. An air conditioner comprising a casing formed to provide an air-inlet chamber, a heat chamber, an air-delivery



1,969,829

chamber above the heat chamber, an air-transfer chamber at the end of the heat chamber below and directly contiguous to the air-delivery chamber and an air-cooling chamber at the end of both the air-delivery chamber and the air-transfer chamber, contiguous to and adapted to open into each, means for forcing air through the air-transfer chamber and around the heat chamber to the air-delivery chamber without passing through the air-cooling chamber, and means for simultaneously cutting off the flow of air around the heat chamber and opening it to pass through the air-cooling chamber to the air-delivery chamber.

1,969,832. METHOD OF FREEZING FISH AND OTHER FOODSTUFFS. Harry R. Beard, Vancouver, British Columbia, Canada, assignor to New England Fish Co., Boston, Mass., a corporation of Maine. No Drawing. Application April 11, 1929. Serial No. 354,446. 8 Claims. (Cl. 99—14.)

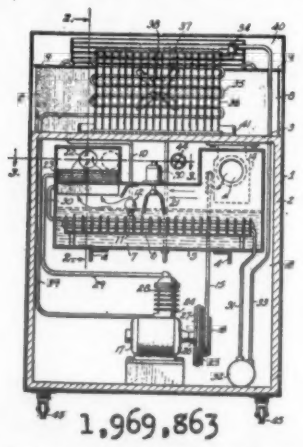
4. The method of freezing fish or other foodstuffs, by a refrigerated gaseous medium, which includes exposing the articles to said medium until their surface layers only are frozen, contacting them with water until an ice glaze is formed on their surfaces, and continuing the freezing by said medium.

1,969,833. APPARATUS FOR TREATING FOODSTUFFS. Harry R. Beard, Vancouver, British Columbia, Canada, assignor to New England Fish Co., Boston, Mass., a corporation of Maine. Application Feb. 6, 1930. Serial No. 426,206. Renewed Sept. 21, 1933. 30 Claims. (Cl. 62—104.)

1. Apparatus for treating foodstuffs, including means for setting up a continuous closed circuit of a gaseous refrigerant, and a continuous foodstuff conveyor means running in a closed circuit a portion of which passes through the first-mentioned circuit, elements of said conveyor serving as seal means to prevent loss of the refrigerant.

1,969,863. AIR CONDITIONING DEVICE. John J. Strang and Emile P. Brus, Kansas City, Mo., assignors to Strang Air Conditioning Corp., Kansas City, Mo., a corporation of Missouri. Application Sept. 5, 1933. Serial No. 688,110. 5 Claims. (Cl. 62—129.)

1. An air conditioning apparatus including in combination a refrigeration system employing a normally gaseous refrigerant



1,969,863

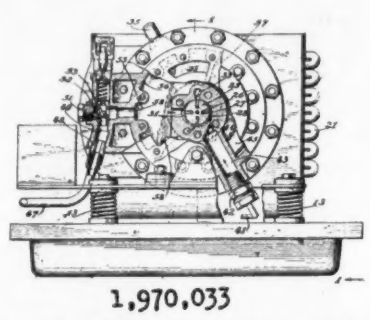
fluid having a refrigerant fluid precooler, a refrigerant fluid condenser and a refrigerant coil, said condenser being immersed in liquid, means for circulating the air to be conditioned over said refrigerating coil, means for passing a separate air stream in contact with the liquid surrounding the condenser and over said precooler, whereby the refrigerant fluid of the refrigeration system is cooled by heat exchange with both liquid and air.

1,969,999. COMPRESSOR UNIT. Joseph W. Cuthbert, Campbell, Calif. Application March 30, 1931. Serial No. 526,339. 2 Claims. (Cl. 230—147.)

1. A compressor unit comprising a casing, means dividing said casing into two axially aligned cylinders, the wall of each cylinder having a longitudinally disposed gas-inlet bore provided with a longitudinal slot throughout its length and establishing communication between the cylinder and the bore, each cylinder having an exhaust port independent of the exhaust port of the other cylinder, a common gas-inlet for said gas-inlet bores, a separator blade pivotally mounted in the wall of each cylinder at a position between the gas-inlet bore and the exhaust port, eccentrics located within the respective cylinders, and pistons mounted on the respective eccentric, each piston having a chordal slot therein complemental to said separator blade.

1,970,033. FLUID COMPRESSOR. James H. Dennedy, Evansville, Ind., assignor to Rotorite Corp., Chicago, Ill., a corporation of Illinois. Application June 24, 1931. Serial No. 546,532. 3 Claims. (Cl. 230—139.)

1. A refrigerant compressor unit for a refrigerating system, comprising a low starting torque motor, a rotary refrigerant



1,970,033

gas compressor driven thereby and having an inlet and outlet, a housing enclosing and sealing the motor and compressor and means forming inlet passage from an expansion chamber of the system to the compressor inlet and including a check valve, and wall means in the casing forming a refrigerant reservoir in communication with the inlet passage between the check valve and the compressor inlet, the reservoir being of a volume which is greatly in excess of operating passage requirements and which will store sufficient refrigerant leaking back from the discharge side of the compressor during additional idle periods to permit the motor to assume substantially its operating speed before the compressor builds up a normal pressure differential, said wall means for the reservoir being in heat exchange relation between the compressor and the refrigerant within the reservoir.

1,970,034. MECHANICAL MOVEMENT. William D. Drysdale, Buffalo, N. Y., assignor to Walter J. Sugden, Boston, Mass. Application Aug. 4, 1932. Serial No. 627,415. 20 Claims. (Cl. 74—38.)

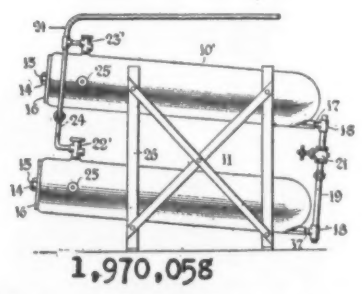
1. In a mechanism for translating rotary motion to reciprocatory motion, the combination of a rotatable driving element, an oscillatory element having a shaft portion whose axis is eccentric with relation to the axis of said rotatable element, said shaft portion being within and revolved by said rotatable element about the axis of the latter, stop means to limit oscillatory movement of said oscillatory element in opposite directions, a spring within said rotatable element yieldingly resisting oscillatory movement of said oscillatory element with relation to said rotatable element, an orbitally movable element carried by said oscillatory element and having two movements, one an orbital movement caused by rotation of said rotatable element and the other an arcuate movement caused by oscillation of said oscillatory element with relation to said rotatable element, and a weight carried by said oscillatory element to turn the latter about its axis in opposition to the yielding resistance of said spring in response to variations in the speed of rotation of said rotatable element.

1,970,057. TEMPERATURE CONTROL AND THE LIKE. Carl A. Otto, Milwaukee, Wis., assignor to Johnson Service Co., Milwaukee, Wis., a corporation of Wisconsin. Application July 27, 1932. Serial No. 625,103. 15 Claims. (Cl. 236—91.)

8. In a regulating device, the combination of a leak port and a valve coacting therewith each movably mounted; and two thermostatic means, one subject to indoor dry bulb temperature and the other subject to outdoor wet bulb temperature, one arranged to shift said leak port and the other arranged to shift said valve.

1,970,058. APPARATUS FOR STORING AND DISPENSING CARBON DIOXIDE. Alonzo W. Ruff, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a corporation of Delaware. Application July 21, 1931. Serial No. 552,256. 3 Claims. (Cl. 62—91.5.)

1. In apparatus of the class described, in combination, a pair of horizontally disposed elongated storage chambers sup-



1,970,058

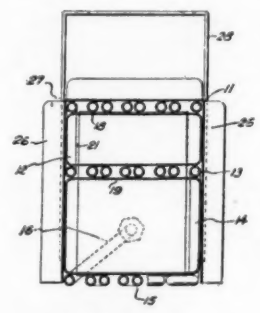
ported one above the other, each having a valved outlet on its upper side and an opening on its under side; pipe means connecting said openings; and a valve in said connecting means.

1,970,105. CONDENSER AND METHOD OF MAKING THE SAME. Lawrence C. Smith, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y. Application March 24, 1932. Serial No. 600,901. 4 Claims. (Cl. 113—118.)

1. A heat dissipating member comprising a copper ribbon formed with continuous undulating portions determined by crests and troughs, flattened portions formed in the troughs along the longitudinal axis of the ribbon, and a ribbon of solder superimposed on the copper ribbon and along the longitudinal axis thereof, said solder ribbon being coextensive with the length of the copper ribbon and being lightly bonded thereto.

1,970,106. REFRIGERATION EVAPORATOR. Lawrence C. Smith, Kenmore, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y. Application Dec. 1, 1932. Serial No. 645,265. 5 Claims. (Cl. 62—95.)

5. An evaporator comprising planar coils and rectilinear sleeves disposed alternately on each other to form a multi-layer structure, and means cooperating to retain the structure in assembled relation comprising a plurality of spaced members each extending laterally about three sides of the structure and secured to the sleeves



1,970,106

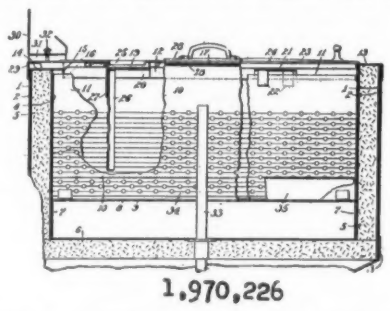
thereof, said members being formed with radially extending portions providing fin surfaces.

1,970,214. REFRIGERATING APPARATUS. Edmund E. Allyne, Cleveland Heights, Ohio. Application Oct. 31, 1931. Serial No. 572,326. Renewed June 7, 1933. 8 Claims. (Cl. 62—118.)

6. In an absorption cycle refrigerating apparatus, a still-absorber, evaporator and condenser connected in operative cycle, a heat exchanger in closed circuit with said still-absorber, a gas return in communication with said heat exchanger and a baffle in said heat exchanger circuit.

1,970,226. BOTTLE DISPENSING REFRIGERATOR. Chester A. Frick, Muncie, Ind., assignor to Glascock Brothers Mfg. Co., Muncie, Ind., a corporation of Indiana. Application April 11, 1930. Serial No. 443,284. 4 Claims. (Cl. 312—36.)

4. In a bottle dispensing refrigerator, the combination with a receptable for containing a refrigerant of a channel-way in



1,970,226

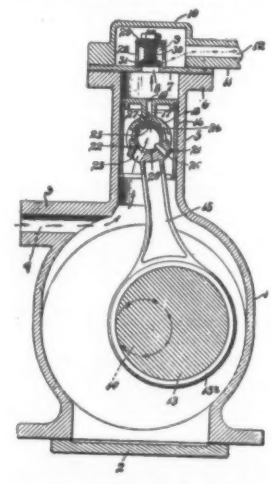
said receptacle, a sliding cover for said channel-way slidable rearwardly to expose the front end of said channel-way and having a bottle receiving opening at its rear end, a cross-member above said channel-way and beneath said cover and spaced from the rear wall of the channel-way to close the opening when the cover is moved forward, a propeller mounted on said cover to the rear of said opening extending downwardly into said channel-way, means on said cover for engaging beneath said cross-member when the cover is moved forward and a top plate above said cover, the distance between the front edge of said top plate and said cross-member being less than the distance between said propeller and the rear edge of the cover.

1,970,234. MEANS FOR AND METHOD OF HUMIDIFYING AIR. Lyman C. Huff, Winnetka, Ill. Application May 29, 1930. Serial No. 457,070. 10 Claims. (Cl. 261—15.)

1. A method of humidifying air, which comprises passing a quantity of air countercurrent to the flow of an unconfined continuous thin film of liquid thereby evaporating a substantial portion of said liquid and carrying said evaporated liquid in entrainment in said air.

1,970,260. COMPRESSOR. George E. Tubbs and Fred I. Brown, Hillsdale, Mich.; said Brown assignor of one-sixth to said Tubbs. Application June 6, 1932. Serial No. 615,630. Renewed July 5, 1934. 3 Claims. (Cl. 230—221.)

1. In a compressor comprising, an enclosed casing having an inlet thereinto, a cylinder extending from the casing and

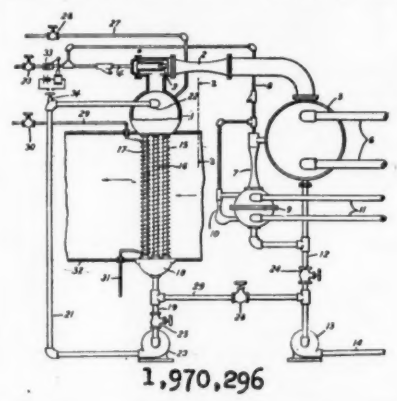


1,970,260

in communication therewith, a piston in the cylinder, said cylinder having an opening in its outer end, a valve normally closing said opening, the combination of means for reciprocating the piston, including a piston rod and connections between said piston rod and piston, said connections comprising, a tubular piston pin having communication with said casing and an outlet opening therein, and said piston having a passage leading from said tubular piston pin to the upper end of the piston, there being connections between the piston rod and piston pin for rocking the piston pin on reciprocation of the piston to periodically open and close communication between said passage in the piston and the outlet opening in the tubular piston pin.

1,970,296. AIR CONDITIONER. Walter L. Fleisher, New York, N. Y. Application Aug. 19, 1932. Serial No. 629,483. 3 Claims. (Cl. 257—9.)

2. An air conditioning apparatus comprising an air conduit through which the air to be conditioned is circulated, a fluid reservoir, a plurality of heat interchanger pipes mounted vertically in said conduit having their upper ends directly connected to said fluid reservoir, means



1,970,296

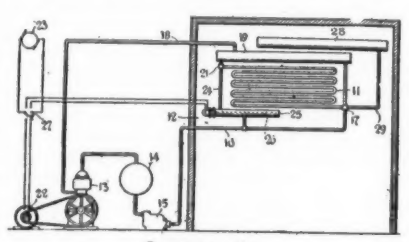
connected to the lower end of said pipes for circulating fluid through said reservoir and said pipes, means for maintaining a reduced pressure in said reservoir for cooling the fluid circulated therethrough, and means for supplying a heating fluid to said reservoir and said pipes at certain periods for heating.

1,970,301. AIR CONDITIONING METHOD AND APPARATUS. Edward M. Frankel New York, N. Y. Application Dec. 10, 1931. Serial No. 580,189. 14 Claims. (Cl. 257—9.)

5. Air conditioning apparatus including a conditioning chamber having a humidity absorbing medium, a regenerating chamber for withdrawing excess moisture from the absorbing medium, means for continuously feeding humidity laden medium to the regenerating chamber and regenerated medium to the conditioning chamber, a humidity responsive instrument subjected to the conditioned atmosphere discharged from the apparatus, and means interrelating said instrument with said regenerating chamber to determine the effectiveness of regeneration thereby to maintain the humidity at a predetermined value for a predetermined temperature.

1,970,340. DEFROSTING APPARATUS. Alonzo W. Ruff, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a corporation of Delaware. Application Sept. 3, 1930. Serial No. 479,541. 13 Claims. (Cl. 62—115.)

1. The method of defrosting flooded evaporators having liquid and suction connections which comprises suspending the



1,970,340

flow of refrigerant through the evaporator, applying heat to the refrigerant to evaporate a portion thereof, and causing the resultant vapor to displace refrigerant in the evaporator during application of heat.

1,970,437. METHOD OF AND APPARATUS FOR THE RAPID FREEZING OF LIQUIDS. Nikolai Snitkin, Tallinn, Estonia. Application March 18, 1932. Serial No. 599,788. In Estonia March 21, 1931. 5 Claims. (Cl. 62—107.)

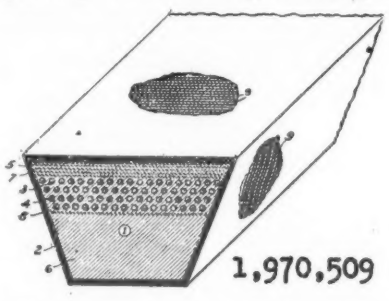
1. A method of freezing liquids, particularly those of an organic origin, comprising ejecting a liquid in a finely subdivided state and passing a plurality of jets of cooled air in different directions through said subdivided liquid, said liquid and said jets of cooled air forming a whirlwind motion during the last-mentioned step.

1,970,481. PROCESS OF BONDING FINS TO RADIATOR TUBES. Fred M. Young and Leon M. Young, Racine, Wis.; said Leon M. Young assignor of one-half to Young Radiator Co., Racine, Wis. Application March 9, 1933. Serial No. 660,114. 1 Claim. (Cl. 29—157.3.)

A method of bonding heat conducting fins to a tube which consists in first coating the exterior of the tube with suitable bonding material, next inserting the tube into a multiplicity of fins having flanged openings therefor, next expanding the tube to thereby cause said flanged openings in the fins to more snugly embrace the tube, next inserting a torch into the tube, said torch comprising a mixing head at one end of a tube and a torch head at the other end thereof, said torch head having means to thereby hold the same centrally in the tube and an orifice at the end thereof, whereby a flame of limited area is self maintained in the tube, next moving the flame slowly through the tube whereby to fuse the bonding material and bond the flanged openings to the tube in consecutive order.

1,970,509. V-BELT. George F. De Wein, Milwaukee, Wis., Willard D. Eakin, Hudson, Ohio, and Peter C. McNulty, Milwaukee, Wis., assignors, by direct and mesne assignments, of one-third to The B. F. Goodrich Co., Akron, Ohio, a corporation of New York, and two-thirds to Allis-Chalmers Mfg. Co., Milwaukee, Wis., a corporation of Delaware. Application March 11, 1931. Serial No. 521,636. 7 Claims. (Cl. 74—63.)

1. A belt comprising a core body of rubber, a set of primary tension cords spaced apart in said body, extending di-



1,970,509

rectly lengthwise of the belt, disposed symmetrically with relation to the middle radial plane of the belt, having substantially the same condition of stretch-resistance, and spaced throughout, but confined to, a neutral zone of approximately uniform radial thickness, a set of cover cords spaced apart and extending transversely of the belt, and rubber insulating the cover cords from each other and from the tension cords of the core and constituting substantially the only means maintaining the spacing of the cover cords.

Former Servel Patent Dept. Head Opens Office

NEW YORK CITY—A. Yates Dowell, patent attorney recently in charge of the patent department of Servel, Inc. here has just established new offices at 1158 Munsey Bldg., Washington, D. C. where he will conduct a law practice.

A NEW WATER VALVE

Model 71 Solenoid Valve provides dependable control of water spray nozzles on air washers. Drop forged body—heavy stamped cover, crackle finish. Easily installed, small and neat in appearance. Impact type plunger. For use with water only. Can also be supplied for the control of refrigerants. Working pressure 100 lbs. 3/32" port. Write for details.

AUTOMATIC PRODUCTS CO.
121 N. Broadway Milwaukee, Wis.

Pat. Pending

COOL-RITE

Unit Cooler with exclusive
HUMIDITY RESERVOIRS

The definite scientific contribution to the industry—tens of thousands of humidifier cups in each unit—actually produce high constant relative humidity. Third year of proven success, due to correct capacities, quality and results.
For Walk-ins & Display Cases—9 models & sizes.

COOL-RITE PRODUCTS CORP.
79-85 Willow St. New Haven, Conn.

Spring Action
SHIELDED
CUTTER ARM

Patent Pending

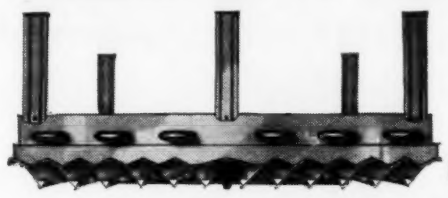
HENRY
TUBE CUTTER

For ¼ to 1¼-in. O. D. copper tubing. Has large replaceable cutter wheel, made of tool steel, hardened and tempered in oil. Housing protects cutter wheel. Will outwear two or three ordinary tube cutters.

HENRY VALVE CO.
Specialized Valves & Fittings for Refrigeration
1001-19 N. Spaulding Ave., Chicago

WRITE FOR BULLETINS DESCRIBING HENRY REFRIGERATION SPECIALTIES

PEERLESS FLASH COOLER



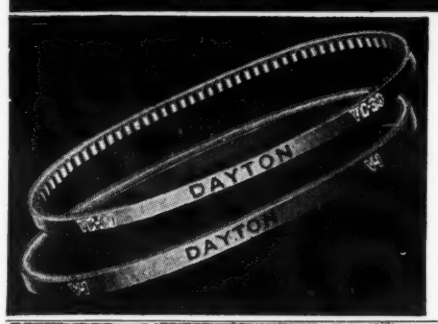
The NEW Eye Appealing Method of Cooling Walk-In Refrigerators

STYLE & RESULTS

Fin Coils and Drip Pans Engineered in an Integral Unit—Saves Installation Cost and Operating Cost

PEERLESS ICE MACHINE CO. 515 W. 35th St. Chicago

DAYTON V-BELTS



● There is a Dayton V-Belt for all makes and types of refrigerators. A stock is available near you. Send for price list and name of your nearest distributor.

THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO
The world's largest manufacturer of V-Belts

COPELAND REPAIRS — REPLACEMENTS

REPAIRS		REPLACEMENT PARTS	
B & B Household Controls	$2.50	Howell Special Capacitor Type ⅙ HP Refrigerator Motor	$11.00
Penn Household Controls	2.50	Amer. Rad. Household Exp. Valve	4.50
Penn Commercial Controls	4.50	Amer. Rad. Multiple Exp. Valve	7.50
Amer. Rad. Household Exp. Valve	2.50	Penn Commercial Controls	$8 & $12.00
Amer. Rad. Multiple Exp. Valve	3.50	Iso Butane (Freezol) Per lb	1.25
Apex Water Regulating Valve	3.50	Methyl Chloride, Per lb	.70
Penn Water Regulating Valve	3.50		

We also carry a complete stock of Gilmer Belts, Penn Water Regulating Valves, Glass Defrosting Trays, Lead and Fibre Gaskets, Etc. WRITE FOR PRICES.

Forty Eight Hour service on repairs, immediate shipment on replacements. All Repairs and Parts guaranteed to be free from defects in Workmanship, and Material for ONE YEAR.

REFRIGERATION SERVICE LABORATORIES, INC.
413-20 Rush Street Chicago, Illinois.

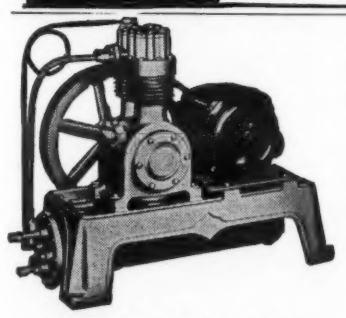
RACK'S KOILS KOOL

THE TRADEMARK OF FOUR
PACE SETTERS
IN COIL EFFICIENCY

SUR-E-FEX	Fin Coils
FAN-E-FEX	Diffusing Units
HUM-E-FEX	Non-Dehydrating Coils
AIR-E-FEX	Air-Conditioning Units

SEND FOR NEW CATALOG DESCRIBING THESE SENSATIONAL DEVELOPMENTS

REFRIGERATION APPLIANCES, INC.
H. J. KRACKOWIZER, Pres.
1342 WEST LAKE ST., CHICAGO

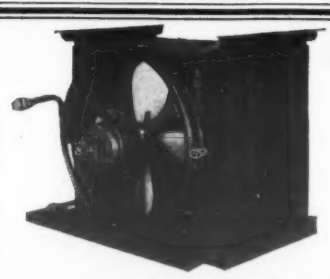


STARR FREEZE
OUTSTANDING PERFORMANCE
attested by satisfied users — EVERYWHERE!

Sturdy Condensing Units from 80 to 2868 Lbs. I.M.E., and all other commercial refrigeration equipment—Wall type cases with machinery—A beautiful household line of modern, conservative styles—Write for full data.

Style EW—Water Cooled With Water Cooled Head

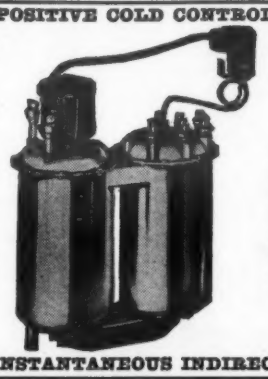
THE STARR COMPANY
Cable "Starr" Richmond, Indiana (factory) U. S. A. Since 1927
1344 S. Flower St., Los Angeles, Calif.



KRAMER UNIT COOLERS
Manifolded for FREON
and for a greater than 20° differential between air and refrigerant
Send for New Literature

TRENTON AUTO RADIATOR WORKS
Main Offices and Factory, TRENTON, NEW JERSEY
NEW YORK, 210-212 West 65th Street PITTSBURGH: 5114 Liberty Avenue

◆POSITIVE COLD CONTROL◆FOAM CONTROL◆AUTOMATIC CONTROL◆SAFE◆
WIDE TEMPERATURE RANGE ◆FLEXIBLE◆ECONOMICAL



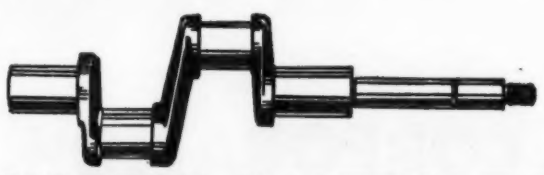
Sell this big aid to Better Business

Dispensers who serve their beer at exactly the desired temperature at all times are getting the bulk of the business these days. Because it enables them to dispense beer in any quantity, at any set temperature, the Radial Dual Control Beer Cooler materially aids dispensers in building up a profitable patronage. Push the Radial Dual Controlled Beer Cooler now—you'll find your prospects enthusiastic over its remarkable advantages. Write today.

COMMERCIAL COIL & REFRIGERATION CO
455 N. Artesian Ave., CHICAGO

◆INSTANTANEOUS INDIRECT COOLING◆WIDE CAPACITY RANGE◆COMPACT◆

SHAFTS . . . Crank and Eccentric for Compressors, made to YOUR Specifications.



Manufacturers—Send Blue Prints for Quotations.

MODERN MACHINE WORKS, INC.
Specializing in the Manufacture of SHAFTS
156 N. Milwaukee Street Milwaukee, Wisconsin

QUESTIONS

Portable Ironers

No. 1818 (Department Store, Kansas)—"We are having calls for portable ironers. Could you tell us where to get them and what manufacturers make portable ironers?"

Answer: According to the Ironrite Ironer Co. of Detroit there are two types of ironers which may be considered portable. The first is constructed to be set on the top of a table, and the second is so made as to be attached to a washing machine in place of the wringer.

The following companies manufacture one or both of the above-mentioned types: Barton Corp., West Bend, Wis.; Easy Washing Machine Corp., Syracuse, N. Y.; and Hurley Machine Co., 22nd St. and 54th Ave., Chicago, Ill.

'Portable' Air Conditioners

No. 1819 (Dealer, New York)—"We have many inquiries for small permanent installations of portable and semi-portable air-conditioning sets. Will you kindly let us know where we can obtain complete data on same?"

Answer: See below.

No. 1820 (Dealer, Illinois)—"Will you kindly advise us where we can obtain information on the various types of portable air conditioners.

"We are subscribers to ELECTRIC REFRIGERATION NEWS, and have closely followed the articles on air conditioning appearing in your weekly, but have so far failed to find what we are interested in. Are there any being manufactured that are self-contained and which are designed to take care of their own condensation so that drain outlets would not be made necessary in the various rooms in which it is to be used.

"We would consider handling any air-conditioning equipment that would be easily installed, easily transported from room to room, and easily sold to people of moderate means.

"We will greatly appreciate any information you can give us in connection with this matter."

Answer: No air conditioners have been developed as yet which could be called 100 per cent portable. The reason is that every air conditioner must have some provision for draining off the moisture condensed in the dehumidification process; and it must also have provision for disposing of the heat removed from the air.

Several manufacturers have introduced "self-contained air conditioners" in which the compressor mechanism is built into the bottom of the cabinet. These all require a rubber hose connection to furnish the cooling water supply, and some sort of a flexible connection to remove the condensate and condenser cooling water to a drain.

Carrier Engineering Corp., Newark, N. J.; Crosley Radio Corp., Cincinnati, Ohio; Frigidaire Corp., Dayton, Ohio; Ilg Electric Ventilating Co., Chicago, Ill.; Strang Air Conditioning Corp., Kansas City, Mo.; and York Ice Machinery Corp., York, Pa., have all announced equipment of this type.

Sources of Information

No. 1821 (Mississippi)—"I have been referred to you by the Government Printing Office, Washington, as the best source of information on electrical refrigeration.

"What I want is some kind of bibliography of books, bulletins, and magazine articles on electrical refrigeration.

"Will you be so kind as to furnish me with any such material you may have on this subject."

Answer: ELECTRIC REFRIGERATION NEWS reports the news and current events of the industry each week and announces new equipment brought out by the various manufacturers. A series of valuable articles on servicing various makes of refrigeration units has been running in the weekly issues. Considerable attention is also being devoted to air conditioning, one issue of each month featuring developments in this field.

Two books dealing with household and commercial electric refrigeration are as follows: "Refrigeration" by Moyer & Fittz, published by McGraw-Hill Book Co., 330 W. 42nd St., New York City, and "Household Refrigeration" by H. B. Hull, published by Nickerson & Collins Co., 435 N. Waller St., Chicago, Ill.

Air Conditioning Makers

No. 1822 (Illinois)—"Please tell me where I can get a list of concerns manufacturing air-conditioning equipment."

Answer: Manufacturers of air-conditioning equipment are listed in the 1934 REFRIGERATION DIRECTORY starting on page 138. Equipment is classified according to the functions performed and each manufacturer is listed under each type of equipment made.

Service Manuals

No. 1823 (Service Man, Ohio)—"I believe that in your magazine some time ago you advertised for a firm in New York that published a refrigeration service manual that covered all makes of refrigerators to the present time and it also published regular supplements.

"I desire to get the address of this firm or party as I am starting an independent service station and desire more information."

Answer: See below.

No. 1824 (New Jersey)—"Will you be good enough to tell me where I can find the following service manuals for electric refrigerator service men: a manual by John F. Rider; a manual by Wright; and one published by Gernsbach Publishing Co."

Answer: A service manual called the "Official Refrigeration Service Manual" is published by Gernsbach Publications, Inc., 96 Park Place, New York City. This book was compiled by L. K. Wright and was published in loose-leaf form. We are not familiar with the manual by John F. Rider.

Although we have not yet published a complete service manual, a series of articles on servicing various makes of refrigeration units has been published in past issues of ELECTRIC REFRIGERATION NEWS. Issues containing service articles are as follows:

Absopure, household, March 25, 1931; Majestic hermetic, Aug. 16, 1933; Allison, May 30 and June 6, 1934; Welsbach household, June 13, 20, and 27, 1934; Rice household, July 4, 1934; Wayne, July 11, 1934; Absopure commercial, July 18, 25, and Aug. 1, 1934; Iceberg household and water coolers, Aug. 8, 1934; U. S. Hermetic, Aug. 15, 1934; ElectrICE refrigerators are covered in the Aug. 22 issue and this issue. This series will be continued in future issues of ELECTRIC REFRIGERATION NEWS, and we suggest that a file be kept of issues containing these articles.

'Jelly Brine Solutions'

No. 1825 (Ice Cream Co., Massachusetts)—"Can you give information as to where I can buy the 'jelly brine solutions' used in ice cream cabinets?

"Also can you give me any information about where I can buy rubber or fibre discs for use in assembling ice cream cabinet lids. Also the metal discs and knobs?"

Answer: For information concerning jelly brine solutions used in ice cream cabinets write to Kold-Hold Mfg. Co., Olds Tower building, Lansing, Mich.

Manufacturers of ice cream cabinet parts are listed on pages 223-24 of the 1934 REFRIGERATION DIRECTORY.

'Magic Ice Box'

No. 1826 (Manufacturer, Ohio)—"We have attempted to secure some information relative to the Magic Ice Box and have reviewed various trade publications covering such household appliances. Since we failed to secure any such data we are communicating with you believing that possibly you will be able to furnish us with the name and address of the manufacturer as well as any other pertinent information available regarding this refrigerator.

"The only data which we have available here is taken from a review of a clipping of the *Kansas City Journal* which was evidently published sometime in March or April, 1934.

"For your information we are subscribers of the magazine ELECTRIC REFRIGERATION NEWS."

Refrigerator Statistics

No. 1827 (Printing House, New York)—"I should like very much to get the following information regarding electric refrigerators, including gas refrigerators in homes:

"1. Total number now in use in homes.

"2. Total number sold during the last year.

"3. Total number of rubber ice trays used in these refrigerators.

"4. Number of rubber ice trays sold during last year.

"If you have no such information available, please be good enough to let me know where I may obtain it."

Answer: According to information contained in the 1934 REFRIGERATION DIRECTORY, it was estimated that 4,665,000 household electric refrigerators were in use in the United States as of Jan. 1, 1934. Household sales in the United States during 1933 totaled 1,015,000 units. These figures do not include gas refrigerators.

For information regarding rubber ice trays in use in electric refrigerators and the number sold in 1933, we suggest that you write to Inland Mfg. Co., 15 Coleman Ave., Dayton, Ohio. This company is the exclusive manufacturer of rubber ice trays.

'North & South' Cooler

No. 1828 (Plumbing & Heating, Kentucky)—"We would appreciate it very much if you would let us know who makes the North & South Water Cooler."

Answer: We believe that you refer to a type of water cooler used in factories in certain southern states. This has two compartments, one section is paneled in white and the other, in black.

Temprite Products Co., 1349 E. Milwaukee Ave., Detroit, Mich., makes a water cooler of this type.

Refrigerator Deodorant

No. 1829 (Dealer, Texas)—"Will you please give us the address of a manufacturer of deodorant for electric refrigerators?"

Answer: The following companies are listed on page 280 of the 1934 REFRIGERATION DIRECTORY as manufacturers of odor absorbers for electric refrigerators: Emloid Co., Inc., 287 Laurel Ave., Arlington, N. J.; Odurgon, 1105 N. Western Ave., Los Angeles, Calif.; Ohio Carbon Co., 12508 Berea Rd., Cleveland, Ohio.

Majestic Repairs

No. 1830 (Dealer, Florida)—"I would appreciate it very much if you will advise me what to do with a Majestic refrigerator when it quits working.

"I understand that the Majestic factory is out of business and I want to know where to send the unit to get it repaired. Will appreciate any information you will give me to the above."

Answer: Grigsby-Grunow Co. is bankrupt, to be sure, but Frank McKey, receiver in bankruptcy, tells us that replacement parts are still available at the factory. Address: Grigsby-Grunow Co., 5801 Dickens Ave., Chicago, Ill.

For service information on the hermetically sealed machine, see the Aug. 16, 1933, issue of ELECTRIC REFRIGERATION NEWS which carried a complete article on the subject. An article is now being prepared for an early issue of the NEWS on servicing the "open type" machine.

CLASSIFIED

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

QUALIFIED Salesmen wanted who understand Refrigeration Beer Cooling Equipment to call on dealers and jobbers throughout the United States for one of the largest manufacturers of Portable Electric Steam Sterilizing Units. Trade name "Steamsterile". Territories, drawings, and repeat commissions. Product absolutely new, mechanically perfect. Most attractive, and priced to sell. Box 634.

POSITIONS WANTED

MECHANICAL ENGINEER with nine years' experience as Engineer, Assistant Chief Inspector and Production Manager, and Chief Inspector of two companies wishes connection in going concern. Box 638.

EQUIPMENT FOR SALE

ATTENTION FIXTURE JOBBERS, DISTRIBUTORS AND DEALERS: We have discontinued the production of fixtures and offer all our remaining stock of complete bars, water coolers, self contained milk coolers and fixture accessories at substantial reductions from jobbers prices. Dealers who act quickly can sell practically all items in this group of merchandise at half price and still make a large profit. Samples may be inspected at our Chicago Warehouse and prompt shipment in any available quantity can be made from factory. Interested parties write or wire Servel Sales, Inc., 549 W. Randolph St., Chicago, Ill.

FOR SALE: 1 Four Ton York 2 Cylinder Ice Machine—first class condition—complete with coils for freezer 20x20 and cooler 20x25. Stowe-Mahrle Company, Three Rivers, Mich.

INDEPENDENT SERVICE COMPANIES

GUARANTEED thermostat repair service, B and B, G. E., Cutler-Hammer, Penn, Ranco, Tag, etc. Regrind and polish float valve needles ten cents per needle, $1.00 minimum charge. Expansion valves repaired. Gas service, Methyl, Ethyl, Sulphur, Iso-butane and others. Any amount, your cylinder or ours. Competitive prices. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

TEMPRITE
Instantaneous Cooling
"The leading cooler for water, beer and other beverages"
Write for Catalog
Temprite Products Corporation
(Formerly Liquid Cooler Corporation)
1349 Milwaukee East :: Detroit